

Historical Expenditures and Current and Future Funding Needs

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DRAFT

CH2M Hill
Sacramento, CA

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Historical Expenditures and Current and Future Needs

Purpose

This document supports information contained in the *California Water Plan Update 2018*. The purpose of this document is to provide a description of California's water resources management historical expenditures and the existing funding needs in the State. The historical expenditure data includes capital and ongoing public agencies' (State, local, and Federal agencies) historical expenditures. Historical expenditure data is organized by management action type and water sectors. In this document, capital management actions include infrastructure development, repair, replacement or rehabilitation. Ongoing actions include planning, data management, tracking and reporting, operations, and maintenance. Historical expenditure data is provided for State fiscal year 2005/2006 (2006) to 2014/2015 (2015). This timeframe was selected due to data availability at the local, State, and Federal levels. This document also provides information on the accrued interest on debt from State general obligation (GO) bonds.

This document provides information pertaining to the projected existing water management funding needs and existing water management funding gap. Projected water management funding need was estimated from planned and proposed management actions collected from State, local, and Federal agencies.

Historical expenditure and funding need information is used in the *California Water Plan Update 2018* to provide context and data for inclusion into the funding analysis, described in the *Funding Scenario Analysis* supporting document.

Organization

This *Historical Expenditures and Current and Future Funding Needs* supporting document is organized to provide information about State, local, and federal historical expenditures and project need:

- California Water Resources Management Historical Expenditures
 - Historical State Expenditures
 - Historical Local Expenditures
 - Historical Federal Expenditures
- California Water Resources Management Existing Funding Need
 - Capital Funding Need
 - Ongoing Funding Need

California Water Resources Management Historical Expenditures

To characterize historical annual expenditures data was collected from State, local, and Federal sources from 2006 to 2015. This timeframe was used based on data being readily available for all agencies. The data for historical annual expenditures on water resources management in California is presented for State, local, Federal, as well as a combined total for public agencies (State, local, Federal). The historical data is categorized into capital and ongoing for the following five thematic areas or water sectors:

- Flood Management:
 - Capital expenditures include investment in urban and rural infrastructure (channels, levees, levee setbacks), storage (transitory as well as detention or retention basins), and bypass expansions.
 - Ongoing expenditures include investments in planning, emergency management, residual risk reduction and floodplain management, operations, maintenance, data management, tools, monitoring, and performance tracking.
- Water Supply Reliability:
 - Capital expenditures include investments in surface storage, groundwater storage and facilities, conjunctive use, conveyance, contracts (water transfers), and recycled water, desalination, urban and agricultural water use efficiency measures, and precipitation enhancement.
 - Ongoing expenditures include investments in planning, groundwater management, drought preparedness, operations, maintenance, data management, tools, monitoring, and performance tracking.
- Water Quality:
 - Capital expenditures include investment in groundwater remediation, water and wastewater treatment, stormwater management.
 - Ongoing expenditures include investments in planning, emergency preparedness, operational activities, watershed management, operations, maintenance, data management, tools, monitoring, and performance tracking.
- Ecosystem Management:
 - Capital expenditures include investments in ecosystem recovery activities, mitigation activities, ecosystem services, and natural infrastructure.
 - Ongoing expenditures include investments in planning, emergency preparedness, watershed management, operations, maintenance, data management, tools, monitoring, and performance tracking.
- People and Water:
 - Capital expenditures include investments in infrastructure that support recreation, historical, cultural, and aesthetics as well as navigation and boating.
 - Ongoing expenditures include investment in planning, education, operations, maintenance, data management, tools, monitoring, and performance tracking.

All historical expenditure data is reported in the actual year value and was not adjusted to a common year value.

Historical State Agency Expenditures

State agencies historical expenditures on water management was collected from the California Department of Finance published enacted Governor's budget from 2006 to 2015. Specifically, historical expenditures for water resources management by the State were derived from the California Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), and California Department of Fish and Wildlife (CDFW) enacted budgets. Historical expenditures were categorized into capital and ongoing expenditures as well as by water sector based on funds accounts descriptions and State GO bond proposition language. This section of the document will provide a summary of historical expenditures for each of these agencies.

California Department of Water Resources

DWR's is responsible for managing and protecting California's water resources. DWR works with other agencies to benefit the State's people and to protect, restore, and enhance the natural and human environments (DWR, 2018). Due to DWR's broad mission, it has responsibilities across the all water sectors in California either providing local technical assistance, planning, data management, or financial support for local agencies. DWR efforts are supported by almost 40 State funds accounts, which receive funding from either State GO bonds, the State general fund (GF), or other special designated funds (e.g., California Environmental License Plate Fund). Table 1 provides a list of the funds accounts that support DWR efforts along with a description of the funds account and the year the fund was established. The funding from these accounts are used to support flood management, water supply reliability, water quality, ecosystem management, and people and water management actions.

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
California Safe Drinking Water Fund of 1988 (Proposition 81)	Proposition 81 provides loans and grants to domestic water systems with projects that improve the quality of potable water. The fund receives revenue through the sale of GO bonds. Projects that qualify for loans or grants include planning, water conservation, water loss detection, capital improvements, and corrosion control (California Safe Drinking Water Bond law of 1988 California Proposition 81, 1988).	1988
Davis-Dolwig Account, California Water Resources Development Bond Fund	The California Water Resources Development fund is appropriated for the costs of the state water resources development system and for facility operations, maintenance, and capital costs attributable to recreation and fish and wildlife enhancements (California Department of Finance [DOF], 2012a).	2012
1984 State Clean Water Bond Fund (Proposition 25)	Proposition 25 was created as a depository for the proceeds from the sale of \$325 million of GO bonds. The funding account distributed bond revenues as follows (DOF, 2012b): <ul style="list-style-type: none"> Clean Water Construction Grant Account: \$250 million was appropriated for grants and loans to municipalities to aid in construction of eligible projects and purposes. Small Communities Assistance Account: \$40 million was appropriated for supplemental state assistance to small communities for the construction of water treatment projects. Water Reclamation Account: \$25 million was appropriated for loans to municipalities for eligible water reclamation projects. Water Conservation Account: \$10 million was appropriated for loans to municipalities to conduct of voluntary, cost-effective capital outlay water conservation programs. 	1984
1986 Water Conservation and Water Quality Bond Fund (Proposition 44)	Proposition 44 created two sub-funding accounts for the proceeds of the sale of \$150 million in GO bonds. Funding was allocated, specifically to (Water Conservation and Water Quality Bond Law of 1986 California Proposition 44, 1986): <ul style="list-style-type: none"> Agricultural Drainage Water Account: \$75 million was allocated to be used by the State Water Resources Control Board for loans to public agencies for studies and construction of treatment, storage and disposal facilities for agricultural drainage water. Water Conservation and Groundwater Recharge Account 	1986

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
	\$75 million was allocated for providing loans to local agencies to aid in the acquisition and construction of voluntary, cost-effective capital outlay water conservation programs and groundwater recharge facilities.	
1988 Water Conservation Fund (Proposition 82)	<p>Proposition 82 authorized the financing of specified local water projects assistance programs, water conservation programs, and groundwater recharge facilities. Specifically (Water Conservation Bond Law Of 1988 California Proposition 82. 1988.):</p> <ul style="list-style-type: none"> Local Water Projects Assistance Account: \$20 million was allocated for loans to local agencies to aid in the construction of eligible projects. Water Conservation and Groundwater Recharge Account: \$40 million was allocated for appropriation by the California Legislature for loans to local agencies to aid in the acquisition and construction of voluntary, cost-effective capital outlay water conservation programs, and groundwater recharge facilities. 	1988
Air Pollution Control Fund	The Air Pollution Control Fund was created to act as a depository for penalties and fees collected on vehicular and nonvehicular air pollution control sources. Funding is available to the State Air Resources Board. For water management, the funding account is allocated towards supporting turbine construction for hydropower and for water conservation (DOF, 2012c).	1970 (originally created in 1928 and renamed in 1970)
Bay-Delta Multipurpose Water Management Subaccount	<p>The San Francisco Bay/Sacramento – San Joaquin Delta Estuary (Bay-Delta) Multipurpose Water Management Subaccount is allocated for CALFED projects to construct or relocate treatment facilities, control waste discharges, fish facilities, control drainage, or construct a permanent barrier at Grantline Canal, Old River, and south Delta channels. Specifically (DOF, 2012d):</p> <ul style="list-style-type: none"> \$17 million was appropriated for constructing treatment facilities or relocating discharge facilities for agricultural drainage generated within the Delta to improve water quality. \$40 million was appropriated for constructing facilities to control waste discharges that contribute to low dissolved oxygen and other water quality problems in the lower San Joaquin River and the south Delta. \$120 million was appropriated for constructing fish facilities for the SWP or the CVP to reduce losses of any life stages of fish to water diversions in the San Joaquin River and the Delta. \$40 million was appropriated for constructing a permanent barrier at the head of Old River to improve fish migration and to improve water quality and water level for local diversions. \$17 million was appropriated for constructing facilities to control drainage from abandoned mines that adversely affect water quality. \$16 million was appropriated for constructing a permanent barrier at Grantline Canal to improve water quality and water levels. 	2000
Bosco-Keene Renewable Resources	Money deposited in the Bosco-Keene Renewable Resources Investment Fund may only be appropriated for the following purposes (DOF, 2012e):	1982

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
Investment Fund	<ul style="list-style-type: none"> • Salmon and steelhead hatchery expansion and fish habitat improvement. • Forest resource improvement projects pursuant to the California Forest Improvement Act of 1978. • Urban forestry projects pursuant to the California Urban Forestry Act of 1978. • Agricultural soil drainage programs which will retard desertification and protect agricultural productivity. • Support of technical assistance programs which will prevent soil erosion. • Agricultural, industrial, and urban water conservation programs. • Wildland fire prevention programs pursuant to the Wildland Fire Protection and Resources Management Act of 1978 • Coastal resource enhancement projects. 	
California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Fund (Proposition 40)	<p>Proposition 40 funds \$2.6 billion in bonds for the acquisition, development and improvement of parks and resources, and administrative costs allocable to the bond funded projects. Specifically, appropriations were allocated (California Proposition 40, 2002; DOF, 2012f; State Water Resources Control Board, 2002):</p> <ul style="list-style-type: none"> • \$225 million for California State Parks for acquisition and development. • \$832.5 million for the acquisition and development of neighborhood, community, and regional parks and recreation areas. • \$1.275 billion for land, air, and water conservation programs, including acquisitions for those purposes. • \$267.5 million for the acquisition, restoration, preservation, and interpretation of California's historical and cultural resources. 	2002
California Environmental License Plate Fund	California Environmental License Plate Fund receives revenue from personalized license plates sold by the California Department of Motor Vehicles. Funds are available for use by local governments, state agencies, the University of California, and private research organizations for the California Environmental Protection program (DOF, 2012g).	1979
California Water Resources Development Bond Fund (Proposition 1 passed in 1960)	The California Water Resources Development Bond Act provided for a bond issue of \$1,750 million to be used for the development of the State Water Resources Development System comprising, Central Valley Project, California Water Plan, and including flood control, and augmenting the supplies of water in the Sacramento-San Joaquin Delta (DOF, 2012h).	1960
Central Valley Project Improvement Subaccount (Proposition 204)	Proposition 204 appropriated the payment of cost sharing allocations or for actions directly undertaken by DWR or the California Department of Fish and Game relating to fish and wildlife restoration actions. It also funds a minimal amount of administrative costs for DWR and the California Department of Fish and Game (DOF, 2012i).	1996
Central Valley Water Project Construction Fund	The Central Valley Water Project Construction Fund finances construction, operation and maintenance of dams, reservoirs, canals and power generating facilities of the Central Valley Project (CVP). Funding is also used for protection, restoration, and management of aquatic and riparian habitats throughout the Central Valley, water supplies for wildlife	1992

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
	refuges, and water acquisition and other activities to benefit anadromous fish (DOF, 2102j).	
Central Valley Water Project Revenue Fund	The Central Valley Water Project Revenue Fund acts as a depository for all revenues generated from the operations of the CVP. The money is appropriated for ongoing and capital expenditures, including repair, rehabilitation, and replacement (DOF, 2102k).	1933
Colorado River Management Account	<p>The Colorado River Management Account was created to implement the "California Plan". Funding was specifically appropriated to (DOF, 2012l):</p> <ul style="list-style-type: none"> • Line portions of the All-American Canal and the Coachella Branch of the All-American Canal (totaling \$200 million). • Install recharge, extraction, and distribution facilities for groundwater conjunctive use programs (totaling \$35 million) 	1998
Conjunctive Use Subaccount	The Conjunctive Use Subaccount may be used by DWR for grants for feasibility studies, project design, or the construction of conjunctive use projects on a pilot or operational scale (DOF, 2012m).	1999
Cost of Implementation Account, Air Pollution Control Fund	The purpose of this fund is to support achieving maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources by 2020 (DOF, 2012n).	2012
Dam Safety Fund	The Dam Safety Fund was created as a depository for all fees, penalties, interest, and fines imposed on specified dam owners, for the administration of the Dam Safety Program (DOF, 2012o).	2003
Delta Flood Protection Fund	The Delta Flood Protection Fund provides financial assistance for flood control measures related to Delta levees (DOF, 2012p).	1988
DWR Electric Power Fund	The Electric Power Fund was established during a statewide energy crisis to allocate funds to purchase electric power, as needed (DOF, 2012q).	2001
Disaster Preparedness and Flood Prevention Bond Fund of 2006 (Proposition 1E)	Proposition 1E finances repair, rehabilitation, and replacement of California's flood control structures to protect homes and prevent loss of life from flood-related disasters, including levee failures, flash floods, and mudslides and to protect California's drinking water supply system by rebuilding delta levees that are vulnerable to earthquakes and storms (DOF, 2012r; California Legislative Analyst's Office [LAO], 2006).	2006
Energy Resources Programs Account	The Energy Resources Program Account is the primary funding source for California Energy Commission staff, contract, and operating expenditures (DOF, 2012s).	1983
Feasibility Projects Subaccount	The Feasibility Projects Subaccount funds feasibility studies and environmental investigations for potential projects, including off-stream storage, regional water recycling, water transfer facilities, and desalination (DOF, 2012t).	1996
Flood Protection Corridor Subaccount	The Flood Protection Corridor Subaccount funds the acquisition, restoration, enhancement, and protection of land for flood management, agricultural land preservation, and wildlife habitat protection. In addition, the funding account can be used for projects related to flood protection corridors (DOF, 2012u).	2000
Floodplain Mapping Subaccount	The Floodplain Mapping Subaccount assists local land-use planning to avoid or reduce future flood risks and damages (DOF, 2012v).	1999
General Fund	The General Fund is the principal operating fund for most governmental	1850

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
	activities and consists of all money received in the Treasury of the State (DOF, 2012w).	
Greenhouse Gas Reduction Fund	The Greenhouse Gas Reduction Fund funds measures leading to reductions in greenhouse gas emission and supports long-term, transformative efforts to improve public health and develop a clean energy economy (DOF, 2012x).	2012
Interim Water Supply and Water Quality Infrastructure and Management Subaccount	The Interim Water Supply and Water Quality Infrastructure and Management Subaccount provides grants and loans to local agencies located in the Delta to increase water supply, quality, and enhance water supply reliability (DOF, 2012y; California Water Code § 79205)	1999
Local Projects Subaccount	The Local Projects Subaccount provides grants to public agencies for feasibility studies and loans for water and ecosystem management projects (DOF, 2012z)	1996
River Protection Subaccount	The River Protection Subaccount funds river protection projects in or near major metropolitan areas, such as the San Joaquin River Parkway, and the Kern River Parkway (DOF, 2102aa).	1999
Sacramento Valley Water Management and Habitat Protection Subaccount	The Sacramento Valley Water Management and Habitat Protection Subaccount funds programs or projects in the Sacramento Valley to assist in the implementation of the Water Quality Control Plan for the Bay-Delta (DOF, 2102ab).	1996
Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Fund	The Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Fund provides financing for safe drinking water, water quality, flood protection, and water reliability projects (DOF, 2102ac; Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act, 2000).	1999
Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006	<p>The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund finances projects relating to safe drinking water, water quality and supply, flood control, waterway and natural resource protection, water pollution and contamination control, state and local park improvements, public access to natural resources, and water conservation efforts. It also provides funding for emergency drinking water, and exempts such expenditures from public contract and procurement requirements to ensure immediate action for public safety. Specifically, funds are appropriated (DOF, 2102ad; Water Quality, Safety and Supply, Flood Control, Natural Resource Protection, Park Improvements Bonds, 2006):</p> <ul style="list-style-type: none"> • \$1.525 billion for projects on safe drinking water, water quality and other water projects. • \$65 million for statewide water management projects. • \$928 million for the protection of rivers, lakes and streams. • \$450 million for forest and wildlife conservation. • \$540 million for the protection of beaches, bays, and coastal waters and watersheds. • \$500 million for state parks and nature education facilities. • \$580 million for sustainable communities and climate change 	2006

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
	reduction projects.	
Urban Stream Restoration Subaccount	The Urban Stream Restoration Subaccount provides grants to local agencies, non-profit organizations, and local community conservations corps for flood management projects, stream clearance, flood mitigation, and cleanup activities (DOF, 2012ae; Voter Information Guide for 2000, Primary, 2000).	1999
Water Conservation Account (Proposition 13)	The Water Conservation Account funds projects related to: water conservation projects, groundwater recharge facilities, and infrastructure rehabilitation (DOF, 2012af; Voter Information Guide for 2000, Primary, 2000).	1999
Water Conservation and Groundwater Recharge Subaccount (Proposition 204)	The Water Conservation and Groundwater Recharge Subaccount provides loans to local agencies for the acquisition and construction of voluntary, cost-effective capital outlay water conservation programs and groundwater recharge facilities, as well as grants to local agencies for the development of distribution systems and recharge facilities for increased water supply reliability (DOF, 2012ag).	1996
Water Quality, Supply, and Infrastructure Improvement Fund of 2014 (Proposition 1)	<p>Proposition 1 finances water projects and programs that will: increase the state's supply of clean, safe, and reliable drinking water, protect and restore rivers, lakes, streams, coastal waters, and watersheds, improve water quality, security, and adaptation to climate change, and improve statewide water system operations to increase drought preparedness and flood protection. Specifically, the fund is appropriated (DOF, 2012ah):</p> <ul style="list-style-type: none"> • \$520 million for Clean and Safe Drinking Water, • \$1.495 billion for Watershed Restoration and Protection, • \$810 million for Regional Water Security • \$2.7 billion for Statewide System operations • \$725 million for Water Recycling • \$900 million for Groundwater Sustainability • \$395 million for Flood Management 	2014
Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50)	<p>The Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 provides funds for (DOF, 2012ai):</p> <ul style="list-style-type: none"> • Protection of state, local, and regional drinking water systems. • Grants and loans to assist in meeting safe drinking water standards. • Acquisition, restoration, protection, and development of river parkways. • Contaminant and salt removal technologies. • Implementation of the CALFED Bay-Delta Program. • Grants for projects related to Integrated Regional Water Management. • Grants for the acquisition of easements. • Grants for projects related to the Colorado River Water Use Plan. • Grants for coastal watershed and wetland protection. 	2002
Yuba Feather Flood Protection Subaccount	The Yuba Feather Flood Protection Subaccount funds the implementation of flood control projects along the Yuba and Feather Rivers and their tributaries. Specifically, the funds are appropriated (DOF,	1999

Table 1 Funds Accounts that Support DWR

Funds Account Name	Description of Funds Account	Date Fund Established
(Proposition 13)	2012aj): <ul style="list-style-type: none"> • \$70 million for flood management projects, such as improvements and maintenance of dams, levees, weirs, bypasses and channels. • \$20 million for flood management projects that benefit the ecosystem, including by reducing damage to fish, wildlife, or riparian habitat, and protecting, improving, restoring, creating, or enhancing fish, wildlife, and riparian habitat. 	

Historical Expenditures

DWR is the State agency that predominately funds water supply reliability and flood management activities within California. Between 2006 and 2015, total DWR expenditures on all aspects of water management averaged approximately \$5.9 billion per year. A majority of DWR's total expenditures were for ongoing management actions. Approximately \$5 billion per year (85 percent) were expended on ongoing actions, while capital expenditures averaged \$885 million per year (15 percent). The larger expenditures for ongoing management actions is driven by expenditures for flood management (primarily for operations and maintenance within the Central Valley where the state has a unique responsibility) and State Water Project.

DWR capital expenditures are driven by bond issuance with increased expenditures occurring after 2007. The increased capital expenditures were driven by the passage of flood risk management legislation in 2007, which were motivated by the effects of Hurricane Katrina on New Orleans. Ongoing expenditures remained consistent from 2006 through 2011, typically fluctuating around \$6 billion per year. From 2012 through 2015, ongoing expenditures decreased to approximately \$3 billion per year most likely due to the increased availability of bond funds for water management actions.

Table 2 shows capital, ongoing, and total DWR expenditures between 2006 and 2015. Figure 1 shows the total DWR capital and ongoing expenditures between 2006 and 2015.

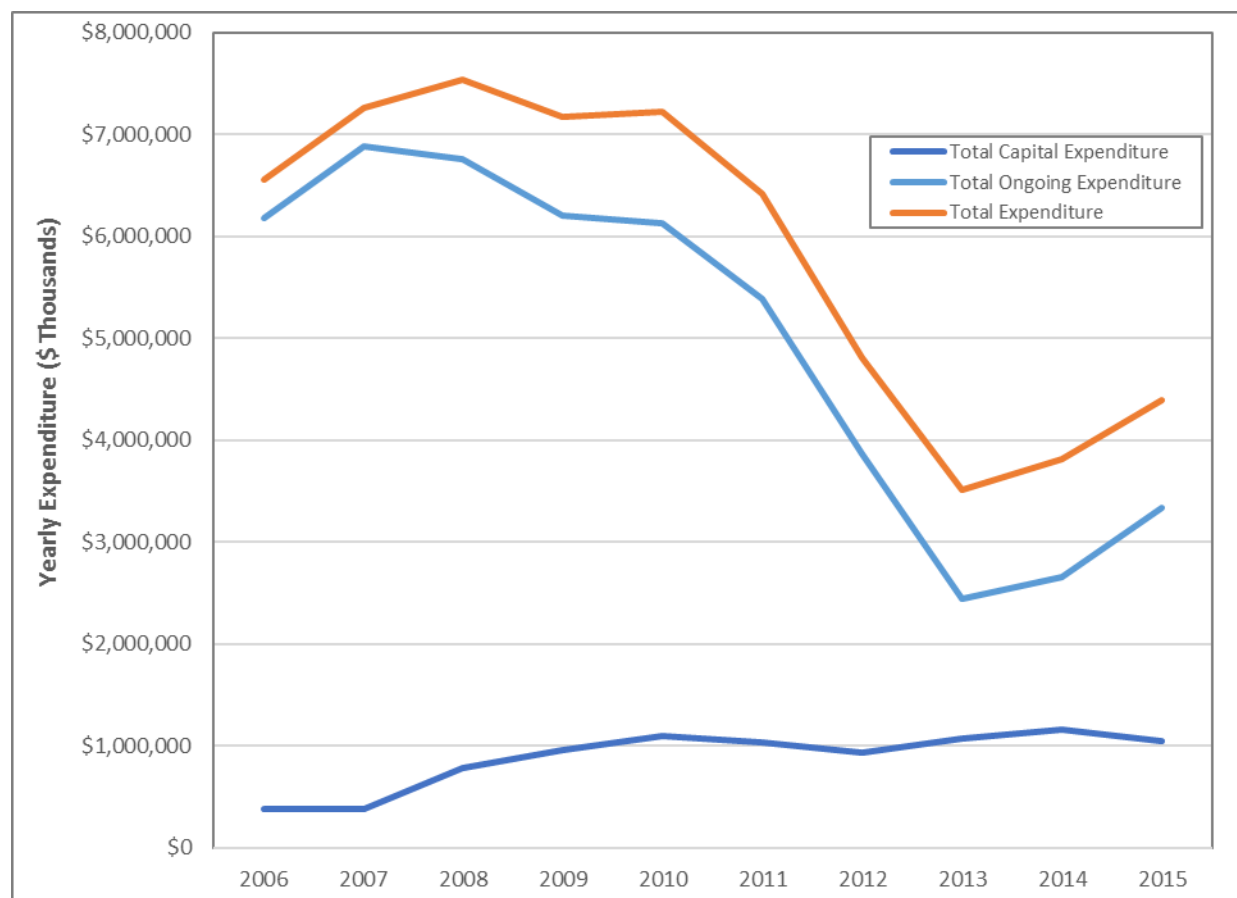
Table 2 DWR Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$380,801	\$6,171,737	\$6,552,538
2007	\$383,865	\$6,875,671	\$7,259,536
2008	\$778,170	\$6,757,271	\$7,535,441
2009	\$959,827	\$6,205,978	\$7,165,805
2010	\$1,097,269	\$6,124,246	\$7,221,515
2011	\$1,033,768	\$5,381,519	\$6,415,287
2012	\$937,593	\$3,863,217	\$4,800,810
2013	\$1,070,868	\$2,439,600	\$3,510,468
2014	\$1,155,641	\$2,652,844	\$3,808,485

Table 2 DWR Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2015	\$1,050,874	\$3,334,916	\$4,385,790
Average	\$884,868	\$4,980,700	\$5,865,568

Source: State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d

**Figure 1 DWR Expenditures on Capital and Ongoing Actions in California, 2006 to 2015**

Source: State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d

DWR Capital Expenditures

DWR capital expenditures averaged approximately \$885 million per year during 2006 to 2015 with maximum 10-year expenditures of \$1.2 billion occurring in 2014 and minimum 10-year expenditures of \$380 million occurring in 2006.

The spike in funding in 2008 was due to a significant increase in funding for flood management due to the adoption of five interrelated flood legislation bills signed by Governor Schwarzenegger in 2007, and made effective on January 1, 2008:

- Senate Bill 5
- Senate Bill 17
- Assembly Bill 5
- Assembly Bill 70
- Assembly Bill 156

Collectively, the legislation intent was to address flood risk management in California, by addressing flood system deficiencies within the State Plan of Food Control (SPFC), availability of flood risk information, and the link between land use planning and flood management (DWR, 2007). The legislation resulted in increased spending: in 2008, approximately \$175 million was allocated for public safety and prevention of damage with over \$29 million allocated from the general fund and nearly \$100 million allocated from the Disaster Preparedness and Flood Prevention Bond Fund of 2006. In addition, approximately \$175 million was allocated for flood management with nearly \$29 million allocated from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 and nearly \$146 million allocated from the Disaster Preparedness and Flood Prevention Bond Fund of 2006. Table 3 and Figure 2 show the DWR capital expenditures between 2006 and 2015 for each of the water sectors.

Table 3 DWR Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$39,517	\$277,274	\$20,173	\$30,886	\$12,952	\$380,802
2007	\$24,833	\$282,456	\$27,824	\$26,098	\$22,655	\$383,866
2008	\$258,478	\$304,412	\$49,768	\$84,372	\$81,140	\$778,170
2009	\$415,846	\$308,629	\$54,010	\$92,554	\$88,787	\$959,826
2010	\$701,872	\$182,102	\$48,393	\$84,678	\$80,223	\$1,097,268
2011	\$694,213	\$177,509	\$38,717	\$63,280	\$60,049	\$1,033,768
2012	\$632,847	\$153,908	\$36,131	\$59,251	\$55,457	\$937,594
2013	\$762,456	\$159,780	\$36,038	\$59,125	\$53,469	\$1,070,868
2014	\$864,404	\$168,095	\$31,094	\$47,796	\$44,253	\$1,155,642
2015	\$802,356	\$156,338	\$25,103	\$34,289	\$32,788	\$1,050,874
Average	\$519,682	\$217,050	\$36,725	\$58,233	\$53,177	\$884,868

Source: State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d

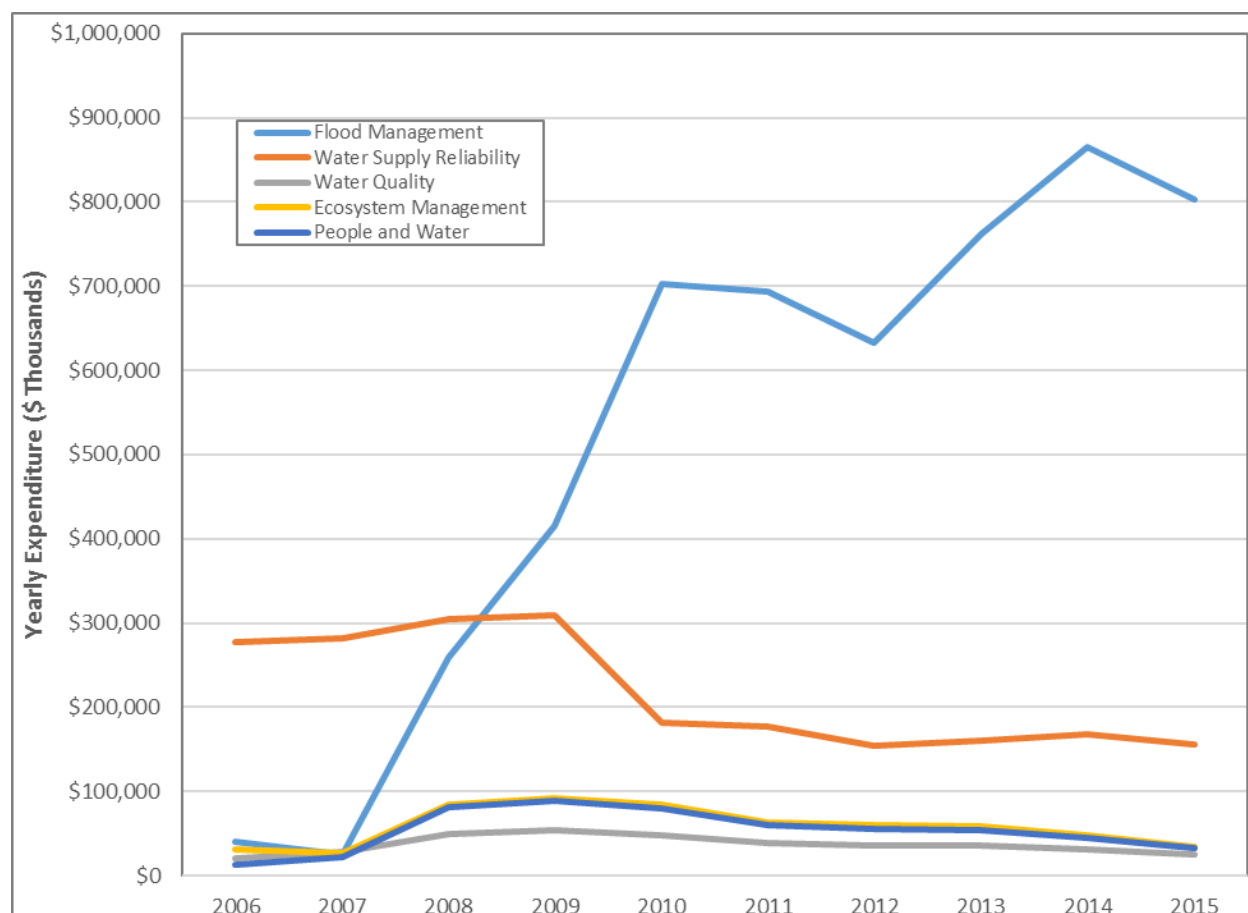


Figure 2 DWR Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d

Notable observations regarding DWR capital expenditures between 2006 and 2015 include:

- Approximately 60 percent of DWR capital expenditures were for flood management actions, averaging approximately \$520 million per year. Capital expenditures for flood management increased significantly after 2007 with the passage of flood management legislation in 2007 and the Disaster Preparedness and Flood Prevention Bond Fund of 2006 (Proposition 1E).
- DWR capital expenditures for water supply reliability management actions accounted for 25 percent of total capital expenditures, averaging \$217 million per year. Water supply reliability expenditures increased from \$277 million in 2006 to \$308 million 2009 before declining after 2010 due to decreases in funding from the Central Valley Water Project Revenue Fund.
- Less than five percent of total DWR capital expenditures were for water quality management actions, averaging approximately \$37 million per year. Between 2006 and 2015, capital expenditures in this water sector increased from \$20 million to \$54 million before decreasing to previous levels. Fluctuations were a result of decreased availability of funding from the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50) after 2007 and increased funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84) between 2008 and 2010.

- Ecosystem management capital expenditures were more than five percent of the total, averaging \$58 million per year. From 2007 through 2009, expenditures fluctuated from \$26 million to \$93 million. Between 2008 to 2010, expenditures for ecosystem increased due to funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84). After 2009, expenditures decreased to \$34 million in 2015 as bond funding decreased.
- Capital expenditures for people and water management actions were more than five percent of the total capital expenditures and averaged \$53 million per year. From 2006 through 2009, expenditures increased from \$13 million to \$89 million before declining to \$33 million in 2015.

DWR Ongoing Expenditures

Overall, DWR ongoing expenditures remained consistent from 2006 through 2015, averaging approximately \$5 billion per year. From 2006 through 2011, ongoing expenditures averaged approximately \$6.3 billion per year. Expenditures decreased after 2012 to a low in 2013 of \$2.4 billion, because less funding was available for ongoing actions. Table 4 and Figure 3 show the total ongoing expenditures between 2006 and 2015 for each of the water sectors.

Table 4 DWR Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$36,860	\$5,934,550	\$75,018	\$97,664	\$27,644	\$6,171,736
2007	\$51,781	\$6,517,209	\$114,759	\$155,500	\$36,421	\$6,875,670
2008	\$74,894	\$6,315,518	\$127,721	\$179,975	\$59,163	\$6,757,271
2009	\$288,981	\$5,397,653	\$151,656	\$234,078	\$133,610	\$6,205,978
2010	\$413,012	\$5,149,016	\$139,825	\$234,940	\$187,453	\$6,124,246
2011	\$401,027	\$4,444,185	\$133,852	\$225,151	\$177,304	\$5,381,519
2012	\$375,947	\$3,062,943	\$95,207	\$175,415	\$153,706	\$3,863,218
2013	\$229,061	\$1,928,465	\$69,570	\$121,674	\$90,830	\$2,439,600
2014	\$216,732	\$2,183,953	\$58,922	\$102,107	\$91,130	\$2,652,844
2015	\$188,530	\$2,656,562	\$103,316	\$212,066	\$174,442	\$3,334,916
Average	\$227,682	\$4,359,005	\$106,985	\$173,857	\$113,170	\$4,980,700

Source: State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d

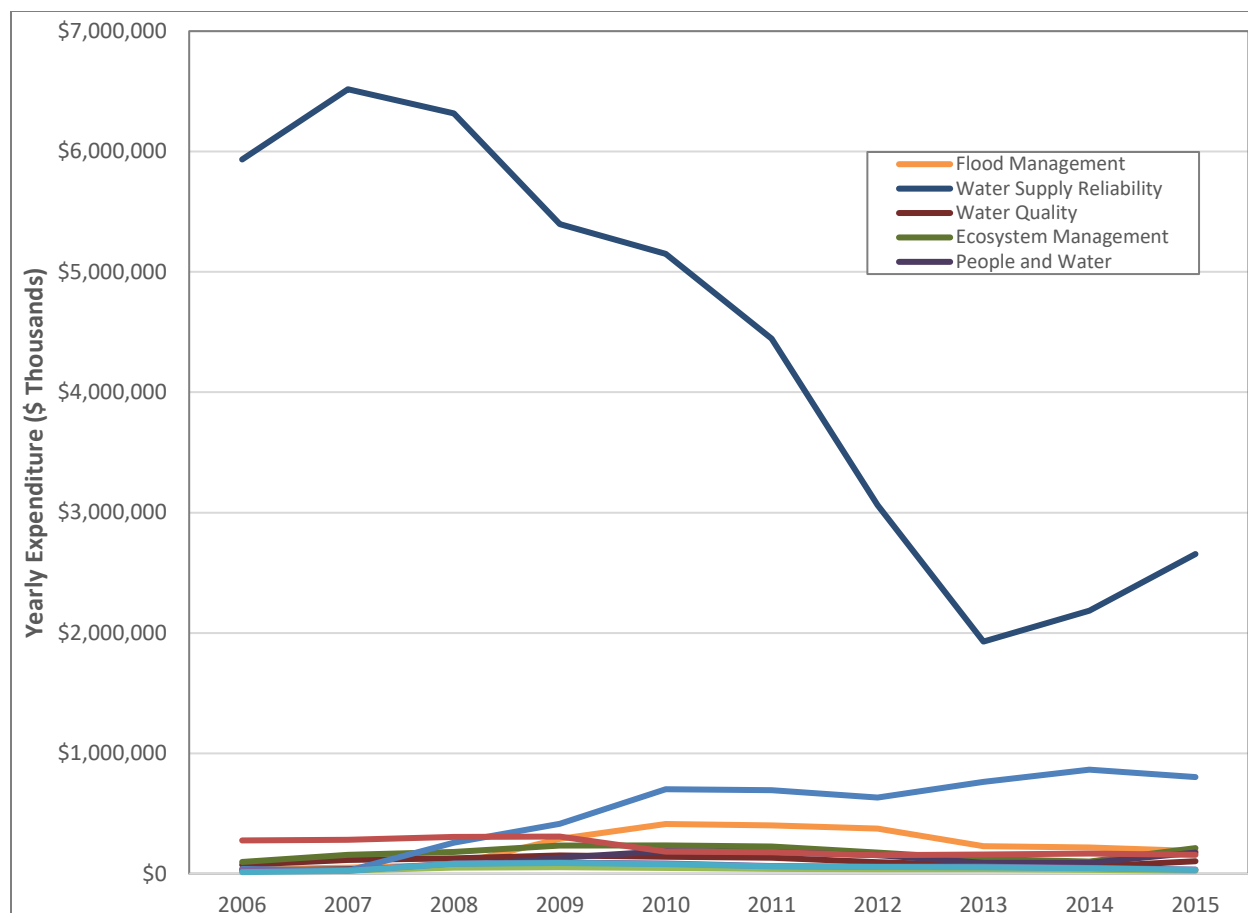


Figure 3 DWR Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d

Notable observations of DWR ongoing expenditures include:

- Ongoing expenditures for flood management actions accounted for five percent of total ongoing expenditures, averaging approximately \$228 million per year. From 2006 to 2015, ongoing flood management expenditures increased from approximately \$37 million in 2006 to approximately \$413 million in 2010 due to the availability of bond funding from Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84), Disaster Preparedness and Flood Prevention Bond Fund of 2006 (Proposition 1E), and Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50). After 2010, ongoing expenditures decreased over time to approximately \$189 million in 2015, as bond funding decreased.
- Ongoing expenditures for water supply reliability management actions accounted for approximately 90 percent of total ongoing expenditures, averaging approximately \$4.4 billion per year. The large expenditure for water supply reliability management is driven by the costs to purchase power for the State Water Project. Ongoing expenditures remained consistent between 2006 to 2010, but declined from 2010 through 2013 to a low of approximately \$1.9 billion per year, before rebounding to approximately \$2.6 billion per year in 2015.

- Ongoing expenditures for water quality management actions accounted for two percent of the total ongoing expenditures, averaging more than \$107 million per year. Ongoing expenditures increased between 2006 and 2009 to a high of more than \$150 million per year before declining to less than \$60 million per year in 2014 as bond funding from Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50) and Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84). Expenditures increased in 2015 significantly to approximately \$103 million per year.
- Ecosystem management ongoing expenditures accounted for three percent of the total ongoing expenditures, averaging \$174 million per year. Ongoing expenditures increased between 2006 and 2010 to a high of approximately \$235 million per year before declining in 2010 to less than \$102 million per year in 2014. The decline was due to reductions in bond funding from Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50) and Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84) as well as reductions in the State GF and the Bay-Delta Multipurpose Water Management Subaccount. Expenditures more than doubled in 2015 to more than \$212 million per year due to bond funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84).
- Ongoing expenditures for people and water management actions were approximately 2 percent of all total ongoing expenditures, averaging \$113 million per year. People and water ongoing expenditures increased from less than \$28 million in 2006 to more than \$187 million in 2010 due to funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84). Starting in 2011 expenditures decreased to a low of \$91 million per year in 2013 as funding from Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84) decreased, before increasing again in 2015 to \$174 million per year.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) was established by the 1969 Porter-Cologne Water Quality Act, which created an entity to manage not only California's water rights, but also the water quality concerns statewide by merging the State Water Rights Board and the State Water Quality Control Board (SWRCB, 2015). Until the wave of environmental concerns in the 1970s, these two concerns – water rights and water quality – were often separated and treated through jurisdictional agencies. With Porter-Cologne, and the subsequent creation of the SWRCB, these came together under one entity. The SWRCB then became responsible for not only establishing the State's water quality standards, but also ensuring these standards were being met.

The SWRCB created nine Regional Water Quality Control Boards (RWQCBs) that were responsible for establishing regional standards and enforcing them (Rosenberg, 2012). To regulate these regional boards, the SWRCB reviews and approves the RWQCB Plans (also known as Basin Plans), which set water quality objectives for both surface and groundwater within the basin. Local agencies within a basin are required to demonstrate they are adhering to these objectives (California Natural Resources Agency, 2002). RWQCBs are delineated by watersheds or water basins; therefore, some counties are in multiple RWQCBs.

SWRCB efforts are supported through more than 50 State funds accounts. Funding mechanisms for capital and ongoing expenditures are facilitated through State and Federal loan and grant programs designed to assist local agencies, businesses, and individuals in achieving sustainable and clean water supplies. Funded SWRCB management actions include remediation of underground storage tank releases, repair and replacement of underground storage tanks, watershed protection, nonpoint source pollution control actions, stormwater control, construction of water recycling facilities, and construction of municipal sewage facilities/wastewater treatment plants (SWRCB, 2011). Table 5 shows SWRCB funding accounts.

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
1984 State Clean Water Bond Fund	<p>The State Clean Water Bond was created as a depository for the proceeds from the sale of \$325 million in GO bonds. The following accounts have been established within the bond (Clean Water Bond Law of 1984, 1984; DOF, 2012b):</p> <ul style="list-style-type: none"> • Clean Water Construction Account Grant (\$250 million) • Small Communities Assistance Account (\$40 million) • Water Reclamation Account (\$25 million) • Water conservation Account (\$10 million) 	1984
1986 Water Conservation and Water Quality Bond Fund	The Water Conservation and Water Quality Bond was established for providing loans to local agencies to aid in the acquisition and construction of voluntary, cost-effective capital outlay water conservation programs and groundwater recharge facilities and to aid in the construction of drainage water management units (DOF, 2012ak).	1986
Administration Account	The purpose of this funding account is to support state expenses related to administration of the Safe Drinking Water Revolving Fund (DOF, 2012al).	2014
Air Pollution Control Fund	The Air Pollution Control Fund was created to act as a depository for penalties and fees collected on vehicular and nonvehicular air pollution control sources. The money in the fund shall be available to the State Air Resources Board to carry out its duties and functions (DOF, 2012c).	1976
California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002	<p>The California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 was issued \$2.6 billion to provide funds for projects that (DOF, 2012f; California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002, 2002):</p> <ul style="list-style-type: none"> • Protect rivers, lakes, and streams to improve water quality and ensure clean drinking water • Protect beaches and coastal areas threatened by pollution • Improve air quality • Preserve open space and farmland threatened by unplanned development • Protect wildlife habitat • Restore historical and cultural resources • Repair and improve safety of state and neighborhood parks 	2002
Coastal Nonpoint Source Control Subaccount	The Coastal Nonpoint Source Control Subaccount provides loans and grants to municipalities, local public agencies, and educational institutions, or nonprofit organizations for a project designed to protect coastal water quality through (DOF, 2012am):	1999

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
	<ul style="list-style-type: none"> Improving water quality at public beaches Monitoring, collecting, and analyzing ambient water quality Improving existing sewer collection systems and septic systems Implementing storm water runoff pollution reduction and prevention programs 	
Cost of Implementation Account, Air Pollution Control Fund	<p>The Cost of Implementation Account, Air Pollution Control Fund provides funds to implement cost-effective reductions in greenhouse gas emissions. Measures could include (DOF, 2012n):</p> <ul style="list-style-type: none"> Direct emission reduction Alternative compliance mechanisms Market-based compliance Mechanisms Potential monetary or nonmonetary incentives 	2012
Delta Tributary Watershed Subaccount	The Delta Tributary Watershed Subaccount was created through Proposition 204, the Safe, Clean, Reliable Water Supply Act. Under the Safe, Clean, Reliable Water Supply Act, the Delta Tributary Watershed Subaccount is allocated \$15 million for grants to counties or joint power authorities for watershed rehabilitation projects that fall within the delta tributary watershed (DOF, 2012an).	1996
Drainage Management Subaccount	The Drainage Management Subaccount was created through Proposition 204, the Safe, Clean, Reliable Water Supply Act. Under the Safe, Clean, Reliable Water Supply Act, the Drainage Management Subaccount is allocated \$30 million for loans to local agencies for facilitating the treatment, storage, or disposal of agricultural drainage water (DOF, 2012ao).	1996
Environmental Laboratory Improvement Fund	The Environmental Laboratory Improvement Fund serves as a depository for fees collected for each permit, license, certification, or registration as specified for administering the Environmental Laboratory Improvement Act of 1988 (DOF, 2012ap).	1995
Environmental Protection Trust Fund	The Environmental Protection Trust fund serves as a depository for fees and penalties collected from owners or operators of above-ground petroleum storage tanks for specified purposes related to spills or releases occurring on or after January 1, 1990 (DOF, 2012aq).	1999
Fire Safety Subaccount	The Fire Safety Subaccount was created by AB 2872 which provides \$5 million to be used to pay claims filed by Fire Safety Agencies in relation to underground storage tank cleanup (DOF, 2012ar).	2000
General Fund	General Fund is the principal operating fund for most of the governmental activities and consists of all money received in the Treasury of the State (DOF, 2012w).	1850
Integrated Waste Management Account, Integrated Waste Management Fund	The IWMA is funded through a per-ton fee charged on solid waste disposal at landfills, commonly referred to as a "tipping fee." The Public Resources Code sets a statutory cap on the fee at \$1.40 per ton. This has been the per-ton rate since 2001 (DOF, 2012as).	1989
Lake Elsinore and San Jacinto Watershed Subaccount	The Lake Elsinore and San Jacinto Watershed Subaccount was established under the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act with a total budgeted allocation of \$15 million. Funds are to be utilized to improve the Lake Elsinore Watershed and water quality and the San Jacinto Watershed by funding one or more of the following projects (DOF, 2012at):	1999

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
	<ul style="list-style-type: none"> • Watershed monitoring • Storm channel modification • Nutrient control • Aeration • Wetlands restoration and enhancement • Fishery enhancement • Calcium quicklime treatment • Sediment removal 	
Lake Tahoe Science and Lake Improvement Account, General Fund	<p>The Lake Tahoe Science and Lake Improvement Account was established under the General Fund through Senate Bill 630. Funds are appropriated for (DOF, 2012au):</p> <ul style="list-style-type: none"> • Costs associated with establishing the bi-state science-based advisory council • Near-shore environmental improvement projects. 	2013
Marine Invasive Species Control Fund	The Marine Invasive Species Control Fund is utilized to support the Ballast Water Management Program which aims to protect against invasive species that may be carried by vessels arriving at California ports (DOF, 2012av).	2003
Nonpoint Source Pollution Control Subaccount	<p>The Nonpoint Source Pollution Control Subaccount was established to provide grant funds that can be used to implement projects or programs that will help to reduce nonpoint source pollution. Activities may include (DOF, 2012aw):</p> <ul style="list-style-type: none"> • Forest management measures on forest lands to improve water quality • Implementing management activities that lead to reduction and/or prevention of pollutants that threaten or impair surface and ground waters. 	2017
Oil, Gas, and Geothermal Administrative Fund	The Oil, Gas, and Geothermal Administration account was designed as a depository for any charges levied, assessed, or collected from well owners or operators. Funds are exclusively for the use of supporting and maintaining the department changed with the supervision of oil and gas. Funds may also be used to account for costs associated with well stimulation treatments and costs incurred by SWRCB (DOF, 2012ax).	2014
Petroleum Underground Storage Tank Financing Account	The Petroleum Underground Storage Tank Financing Account was developed as a loan program to assist small businesses in upgrading, replacing, or removing tanks to meet state, local, or federal standards (DOF, 2012ay).	2011
Public Resources Account, Cigarette and Tobacco Products Surtax Fund	The Public Resources Account, Cigarette and Tobacco Products Surtax Fund is a depository for programs to protect, restore enhance, or maintain fish, waterfowl, and wildlife habitat on an equally funded basis, and for programs to enhance state and local park and recreation resources (DOF, 2012az).	1988
Public Water System, Safe Drinking Water State Revolving Fund	The Drinking Water State Revolving Fund (DWRSF) program assists public water systems in financing the cost of drinking water infrastructure projects needed to achieve or maintain compliance with Safe Drinking Water Act (SDWA) requirements (DOF, 2012ba).	1996
Safe Drinking	The Safe Drinking Water Account provides funds necessary to administer	2001

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
Water Account	the California Safe Drinking Water Act (DOF, 2012bb).	
Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006	<p>The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund provides \$5.4 billion in GO bonds for projects related to (DOF, 2012ad):</p> <ul style="list-style-type: none"> • Safe drinking water • Water quality and supply • Flood control • Waterway and natural resource protection • Water pollution and contamination control • State and local park improvements • Public access to natural resources • Water conservation efforts 	2006
Santa Ana River Watershed Subaccount	<p>The Santa Ana River Watershed Subaccount provides \$235 million for projects with the purpose of rehabilitating and improve the Santa Ana River Watershed. Such projects include (DOF, 2012bc):</p> <ul style="list-style-type: none"> • Basin water banking • Contaminant and salt removal • Removal of nonnative plants, and the creation of new open space and wetlands • Programs for water conservation and efficiency and storm water capture and management • Planning and implementation of a flood control program. 	2000
School District Account, Underground Storage Tank Cleanup Fund	The Underground Storage Tank Cleanup Fund provides underground storage tank users the opportunity to pay for damages associated with tank operations. The School District account was established in September 2008 under Assembly Bill 2729 to provide school districts with funds to clean up sites on school properties (DOF, 2012bd).	2008
Seawater Intrusion Control Subaccount	<p>The Seawater Intrusion Control Subaccount provides \$10 million for loans to local agencies to carry out eligible seawater intrusion control projects. Eligible projects may include (DOF, 2012be):</p> <ul style="list-style-type: none"> • Water conservation • Freshwater well injection • Substitution of groundwater pumping from local surface supplies. 	1996
Small Communities Grant Subaccount	The Small Communities Grant Subaccount provides \$30 million for grants to small communities for construction of eligible treatment works projects (DOF, 2012bf).	1996
Small System Technical Assistance Account	The Small System Technical Assistance Account provides funds to support state expenses related to public water supply systems (DOF, 2012bg).	2014
State Clean Water and Water Conservation Fund	The State Clean Water and Water Conservation Fund provides grants up to 12.5 percent of the cost of wastewater treatment projects eligible for federal assistance and up to \$50 million in grants for projects that do not qualify for federal assistance (DOF, 2012bh).	1977
State Revolving Fund Loan Subaccount	The State Revolving Fund Loan Subaccount provides \$995 million in GO bonds for the financing of prescribed water programs (DOF, 2012bi).	1996

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
State Water Pollution Control Revolving Fund	<p>The State Water Pollution Control Revolving Fund Loan program provides low-interest loan funding for (DOF, 2012bj):</p> <p>Construction of publicly-owned wastewater treatment facilities</p> <ul style="list-style-type: none"> • Local sewers • Sewer interceptors • Water reclamation facilities • Implementation of nonpoint source (NPS) projects or programs • Development and implementation of estuary Comprehensive Conservation and Management Plans • Stormwater treatment 	1987
State Water Pollution Control Revolving Fund Administration Fund	The State Water Pollution Control Revolving Fund Administration Fund was created to expend the moneys for costs incurred by SWRCB in connection with the administration of the Revolving Fund Program (DOF, 2012bk).	2007
State Water Pollution Control Revolving Fund Small Community Grant Fund	The State Water Pollution Control Revolving Fund Small Community Grant Fund was developed to support priority projects that serve severely disadvantaged small community (DOF, 2012bl).	2008
State Water Quality Control Fund	The State Water Quality Control Fund provides loans to municipalities and districts for the construction of facilities for the collection, treatment, or export of waste to prevent water pollution and to reclaim and transport wastewater. In addition, the board may loan up to one-half of the cost of studies and investigations made by public agencies in connection with wastewater reclamation (DOF, 2012bm).	1995
Surface Impoundment Assessment Account	The Surface Impoundment Assessment Account is a depository for fees charged on persons for discharging hazardous wastes into a surface impoundment and for related exemption and penalty fees (DOF, 2012bn).	1984
Timber Regulation and Forest Restoration Fund	The Timber Regulation and Forest Restoration Fund provides a funding mechanism, based on retail sales of lumber and engineered wood products, to provide for development of ecological performance measures, establish a forest restoration grant program, and program reporting to the Legislature (DOF, 2012bo).	2012
Underground Storage Tank Cleanup Fund	<p>The Underground Storage Tank Cleanup Fund was established to assist owners and operators of underground storage tanks. Use of funds can include (DOF, 2012bp):</p> <ul style="list-style-type: none"> • Remediating conditions caused by leaking underground storage tanks • Reimbursement for third part damage and liability • Assist in meeting financial responsibility requirements under federal law • Local Oversight Program • Cleanup of emergency, abandoned and recalcitrant underground storage tank sites • Program administration 	1989
Underground	This program aims to fund the permitting portion of the Underground	1983

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
Storage Tank Fund	Storage Tank (UST) Program. Activities consist of (DOF, 2012bq): <ul style="list-style-type: none"> • Development of regulations • Development of policy and technical guidance • Providing guidance to local agencies in the implementation of the UST Program • Tracking by Regional Boards of tank leaks on the Leaking Underground Storage Tank Information System (LUSTIS) • Employee health and safety training 	
Underground Storage Tank Petroleum Contamination Orphan Site Cleanup Fund	The Orphan Site Cleanup Fund provides \$10 million as financial assistance for the cleanup of contaminated sites where no financially responsible party is present (DOF, 2012br).	2014
Underground Storage Tank Tester Account	The Underground Storage Tank Tester Accounts collects the fees and civil fines for implementing the Tank Tester Licensing program (DOF, 2012bs).	1987
Unified Program Account	The Unified Program is the consolidation of six state environmental programs into one program under the authority of a Certified Unified Program Agency. The Unified Program consolidates the administration, permit, inspection, and enforcement activities of the Hazardous waste and other environmental management programs (DOF, 2012bt).	1994
Waste Discharge Permit Fund	The Waste Discharge Permit Fund is a depository for annual fees collected from wastewater dischargers for use in carrying out water quality control laws. The total amount of annual fees collected pursuant to this section shall equal that amount necessary to recover costs incurred in connection with the issuance, administration, reviewing, monitoring, and enforcement of waste discharge requirements and waivers of waste discharge requirements (DOF, 2012bu).	1989
Wastewater Construction Grant Subaccount	The Wastewater Construction Grant Subaccount provides \$35 million in grants to aid in the construction of treatment works for the Cities of Manteca, Stockton, Tracy, and Orange Cove (DOF, 2012bv).	1999
Wastewater Operator Certification Fund	The Wastewater Operator Certification Fund is a depository of certification fees collected from operators employed at a wastewater treatment plant and can be used to administer this program (DOF, 2012bw).	2010
Water Device Certification Special Account	The Water Device Certification Special Account is a depository for fees collected for certifying water treatment devices (DOF, 2012bx).	1995
Water Recycling Subaccount	The Water Recycling Subaccount was created to provide loans to public agencies to design, construct, operate, and maintain eligible recycling projects and provides grants to public agencies for facility planning studies for water reclamation projects (DOF, 2012by).	1996
Water Rights Fund	The Water Rights Fund was created to deposit water right fees and water quality certification fees for hydroelectric facilities (DOF, 2012bz).	2003
Water Security, Clean Drinking Water, Coastal and Beach Protection	The Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 provides funds for the following purposes (DOF, 2012ai): <ul style="list-style-type: none"> • Secure and safeguard the integrity of the state's water supply (\$50 million) 	2002

Table 5 Funds Accounts that Support SWRCB

Funds Account Name	Description of Funds Account	Date Fund Established
Fund of 2002	<ul style="list-style-type: none"> • Provide a safe, clean, affordable, and sufficient water supply (\$435 million) • Provide adequate financing for balanced implementation of the CALFED Bay-Delta Program (\$825 million) • Establish and facilitate integrated regional water management systems and procedures (\$500 million) • Improve practices within watersheds to improve water quality, reduce pollution, capture additional storm water runoff, protect and manage groundwater better, and increase water use efficiency • Protect urban communities from drought, increase supplies of clean drinking water, reduce dependence on imported water, reduce pollution of rivers, lakes, streams, and coastal waters, and provide habitat for fish and wildlife • Protect, restore, and acquire beaches and coastal uplands, wetlands, and watershed lands along the coast (\$200 million) 	
Water System Reliability Account	To fund state expenses related to the Federal Safe Drinking Water Act (DOF, 2012ca).	2014
Watershed Protection Subaccount	<p>The Watershed Protection Subaccount was developed to implement (DOF, 2012cb):</p> <ul style="list-style-type: none"> • Watershed plans to reduce flooding • Control erosion • Improve water quality • Improve aquatic terrestrial species habitats • To restore natural systems of groundwater recharge, native vegetation, water flows, and riparian zones • To restore the beneficial uses of waters of the state in watersheds 	1999

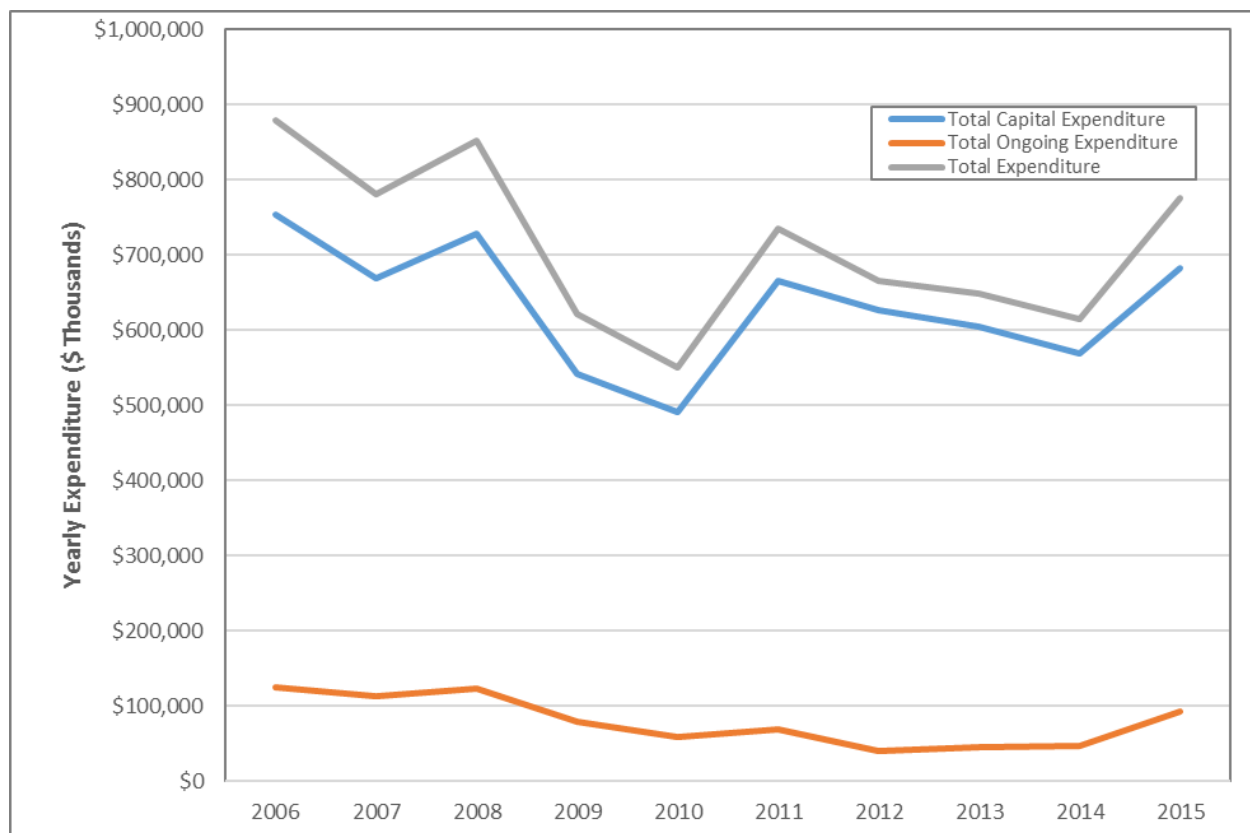
Historical Expenditures

SWRCB funds 70 percent of water quality management actions within California. Between 2006 and 2015, total capital and ongoing expenditures averaged approximately \$713 million per year, with an average of approximately \$663 million per year for capital management actions (approximately 90 percent of total expenditures) and approximately \$79 million per year for ongoing management actions (more than 10 percent of total expenditures). Table 6 and Figure 4 show capital, ongoing, and total SWRCB expenditures between 2006 and 2015.

Table 6 SWRCB Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$754,653	\$125,403	\$880,056
2007	\$668,839	\$112,899	\$781,738
2008	\$728,114	\$123,803	\$851,917
2009	\$541,859	\$79,329	\$621,188
2010	\$490,669	\$59,159	\$549,828
2011	\$665,721	\$68,986	\$734,707
2012	\$626,934	\$39,492	\$666,426
2013	\$605,103	\$44,435	\$649,538
2014	\$568,663	\$47,052	\$615,715
2015	\$683,541	\$93,291	\$776,832
Average	\$633,409	\$79,385	\$712,795

Source: State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

**Figure 4** SWRCB Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

SWRCB Capital Expenditures

SWRCB capital expenditures provide funding to support actions within the following water sectors: water supply reliability, water quality, ecosystem management, and people and water. SWRCB capital expenditures primarily fund water quality improvement actions (70 percent of the total capital expenditures). Between 2006 and 2015, SWRCB capital expenditures remained relatively stable without major fluctuations in spending, averaging approximately \$633 million per year. The highest level of capital expenditures occurred in 2006 (approximately \$755 million), and the lowest capital expenditures occurred in 2010 (more than \$491 million). Table 7 and Figure 5 show the total capital expenditures between 2006 and 2015 for each of the water sectors.

Table 7 SWRCB Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$83,496	\$422,170	\$106,515	\$142,472	\$754,653
2007	\$0	\$63,201	\$405,933	\$70,474	\$129,231	\$668,839
2008	\$0	\$106,128	\$467,906	\$122,842	\$31,239	\$728,115
2009	\$0	\$67,277	\$380,865	\$51,139	\$42,577	\$541,858
2010	\$0	\$53,123	\$362,887	\$38,005	\$36,654	\$490,669
2011	\$0	\$55,565	\$520,015	\$41,925	\$48,216	\$665,721
2012	\$0	\$55,835	\$480,235	\$40,644	\$50,220	\$626,934
2013	\$0	\$54,899	\$480,442	\$31,795	\$37,967	\$605,103
2014	\$0	\$53,378	\$439,655	\$30,909	\$44,721	\$568,663
2015	\$0	\$87,945	\$457,924	\$65,238	\$72,434	\$683,541
Average	\$0	\$68,085	\$441,803	\$59,948	\$63,573	\$633,410

Source: State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

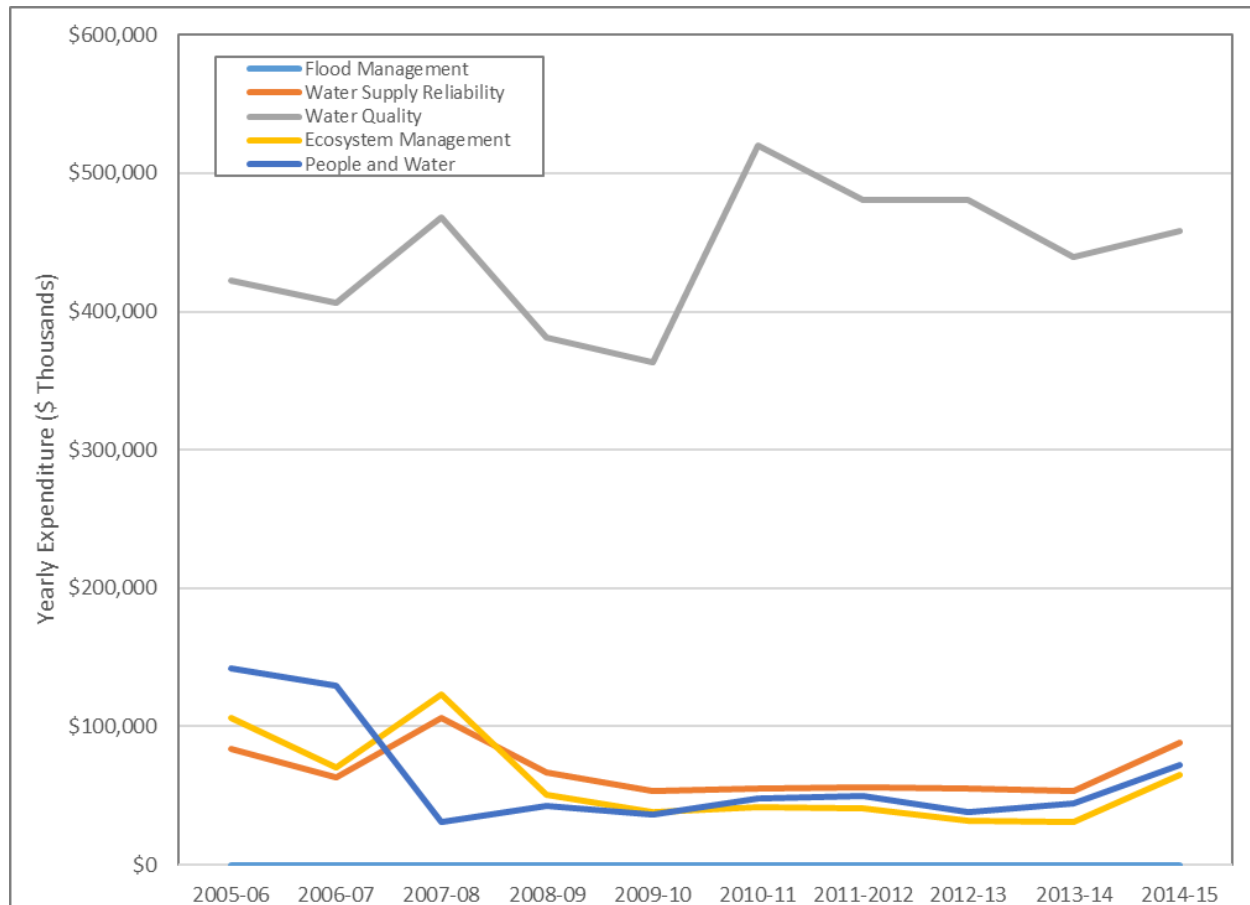


Figure 5 SWRCB Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

Notable observations of SWRCB capital expenditures include:

- There are no capital expenditures directed towards flood management as it is not a responsibility for the SWRCB.
- More than 10 percent of SWRCB capital expenditures were for water supply reliability management actions, averaging \$68 million per year. A majority of this expenditure funded conveyance and recycled water management actions. Capital expenditures for water supply reliability were highest in 2008 due to increased expenditures in the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006.
- Approximately 70 percent of all SWRCB capital expenditures were for the water quality water sector, averaging \$442 million per year. A majority of these expenditures funded water and waste water treatment as well as stormwater management actions. Water quality expenditures remained consistent from 2006 to 2015, with a high in 2011 due to increased funding from the Underground Storage Tank Cleanup Fund.
- Capital expenditures for ecosystem management were approximately 10 percent of the total capital expenditures, averaging \$60 million per year. From 2006 to 2015, expenditures fluctuated, with a high of \$123 million in 2008 and a low of \$31 million in 2014. Some fluctuations are due

to changing funding availability: for instance, the Lake Elsinore and San Jacinto Watershed Subaccount was only funded in 2008.

- Approximately 10 percent of all capital expenditures were for the people and water sector, averaging \$64 million per year. Capital expenditures funding people and water management actions, predominately focused on recreation. The highest year of capital expenditures occurred in 2006, due to funds from the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection (Proposition 40) Fund.

SWRCB Ongoing Expenditures

SWRCB ongoing expenditures fund only water supply reliability, water quality, and ecosystem management actions. SWRCB ongoing expenditures predominantly funded water quality management actions (approximately 70 percent of the total ongoing expenditures). Overall, ongoing expenditures averaged \$79 million per year. Maximum ongoing expenditures occurred in 2006 (approximately \$125 million), and lowest ongoing expenditures occurred in 2012 (more than \$39 million). After 2008, the ongoing expenditures decreased significantly. Table 8 and Figure 6 show the total ongoing expenditures between 2006 and 2015 for each of the water sectors.

Notable observations of SWRCB ongoing expenditures include:

- From 2006 to 2015, there were no SWRCB ongoing flood management expenditures as it is not a responsibility for the SWRCB.
- Ongoing expenditures for water supply reliability were for operations and maintenance of existing systems. Water supply reliability expenditures were more than 15 percent of the total ongoing expenditures, averaging \$14 million per year. From 2006 to 2010, expenditures decreased before increasing in 2011. Maximum expenditures in 2006 was due to funding from the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50).
- Seventy percent of all SWRCB ongoing expenditures were for water quality operations and maintenance, averaging \$55 million per year. Maximum ongoing water quality expenditures were in 2008 through the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 Bond (Proposition 40) Fund. Expenditures decreased from 2008 through 2014, before rebounding in 2015 due to funding from the State Drinking Water Account.
- Ecosystem management expenditures accounted for approximately 15 percent of the total SWRCB ongoing expenditures, averaging \$11 million per year. The expenditures dramatically decreased in 2008 and remained low due to decreases in funding from Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50). Maximum expenditures occurred in 2006 (\$35 million), with the lowest expenditures occurring in 2010 (\$712,000).
- There were no SWRCB ongoing expenditures for the people and water sector as it is not a responsibility for the SWRCB.

Table 8 SWRCB Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$27,796	\$62,726	\$34,880	\$0	\$125,402
2007	\$0	\$23,648	\$66,524	\$22,727	\$0	\$112,899
2008	\$0	\$23,927	\$68,587	\$31,289	\$0	\$123,803
2009	\$0	\$11,618	\$64,840	\$2,870	\$0	\$79,328
2010	\$0	\$3,520	\$54,927	\$712	\$0	\$59,159
2011	\$0	\$7,746	\$56,685	\$4,554	\$0	\$68,985
2012	\$0	\$7,800	\$29,985	\$1,706	\$0	\$39,491
2013	\$0	\$10,370	\$31,249	\$2,815	\$0	\$44,434
2014	\$0	\$11,352	\$32,570	\$3,130	\$0	\$47,052
2015	\$0	\$10,838	\$79,674	\$2,779	\$0	\$93,291
Average	\$0	\$13,862	\$54,777	\$10,746	\$0	\$79,384

Source: State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

**Figure 6** SWRCB Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

California Department of Fish and Wildlife

Originally established in 1870 as the Board of Fish Commissioners before being renamed the Division of Fish and Game in 1927, the California Department of Fish and Wildlife (CDFW) has shifted over its history from an agency largely concerned with fish species, to fish and sport game, to an overarching wildlife agency (CDFW, 2000). This transition became final in 2012 with its name change to reflect the agency's change in scope. CDFW efforts are supported by more than 30 State funds accounts, which receive funding from either State GO bonds, the State GF, or other special designated funds (e.g., California Waterfowl Habitat Preservation Account, Fish and Game Preservation Fund). Table 9 describes the State fund accounts that support CDFW efforts related to water management.

Table 9 Funds Accounts that Support CDFW

Funds Account Name	Description of Funds Account	Date Fund Established
Bay Delta Agreement Sub Account	The Bay Delta Agreement Sub Account provides funding for non-flow-related projects called for in the Water Quality Control Plan for the Sacramento-San Joaquin Rivers Bay-Delta (DOF, 2012cc)	1996
Bay-Delta Ecosystem Restoration Account	The Bay Delta Ecosystem Restoration Account provides funding for projects to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay Delta ecosystem (DOF, 2012cd).	1996
California Environmental License Plate Fund	California Environmental License Plate Fund receives revenue from personalized license plates sold by the California Department of Motor Vehicles. Funds are available for use by local governments, state agencies, the University of California, and private research organizations for the California Environmental Protection program (DOF, 2012g).	1979
California Sea Otter Fund	The California Sea Otter fund is intended to support increased investigation, prevention, and enforcement actions to decrease sea otter mortality, and to provide for research and programs related to sea otters (DOF, 2012ce).	2006
California Waterfowl Habitat Preservation Account, Fish and Game Preservation Fund	The California Waterfowl Habitat Preservation Account is a depository for funds made available for payments on contracts for the conservation of waterfowl and waterfowl habitat (DOF, 2012cf).	1987
Central Valley Project Improvement Sub Account	The Central Valley Project Improvement Sub Account provides funds to pay for the state's cost-sharing allocations or for actions directly undertaken by the DWR or the CDFW relating to fish and wildlife restoration actions required by Section 3406 of the Central Valley Improvement Act (DOF, 2012g).	1996
Coastal Wetlands Account	The Coastal Wetlands Account allows the CDFW and the State Coastal Conservancy to accept contributions from private individuals and organizations, nonprofit organizations, state, and local, and federal agencies including special districts pursuant to the California Environmental Quality Act of the National Environmental Policy Act of 1969 as acceptable mitigation for development projects (DOF, 2012cg)	2006
Environmental Enhancement Fund	The Environmental Enhancement Fund is a depository for monies received as penalties associated with oil spills in marine water which are to be used only for environmental enhancement projects (DOF, 2012ch).	1990
Fish & Wildlife	The Fish and Wildlife Pollution Account is a depository for funds recovered for specific cleanup, removal, or abatement actions or for	1995

Table 9 Funds Accounts that Support CDFW

Funds Account Name	Description of Funds Account	Date Fund Established
Pollution Account	funding the cleanup expenses under specified conditions (DOF, 2012ci).	
Fish and Game Preservation Fund (includes 25 dedicated accounts)	The Fish and Game Preservation Fund is used to pay the expenses of the CDFW in carrying out the provisions of the Fish and Game Code. Money collected under the provisions of this code and of any other law relating to the protection and preservation of birds, mammals, fish, reptiles or amphibian are credited to the Fish and Game Preservation Fund (DOF, 2012cj).	1909
General Fund	General Fund is the principal operating fund for most of the governmental activities and consists of all money received in the Treasury of the State (DOF, 2012w).	1850
Greenhouse Gas Reduction Fund	The Greenhouse Gas Reduction Fund funds measures leading to reductions in greenhouse gas emission and supports long-term, transformative efforts to improve public health and develop a clean energy economy (DOF, 2012x).	2012
Harbors and Watercraft Revolving Fund	The Harbors and Watercraft Revolving Fund is used to finance activities for addressing the boating-related spread of invasive species (DOF, 2012ck).	1957
Hatchery and Inland Fisheries Fund	The Hatchery and Inland Fisheries Fund provides support for the management, maintenance, and capital improvement of California's fish hatcheries, the Heritage and Wild Trout Program, and enforcement activities and to support other activities eligible to be funded from revenue generated by sport fishing license fees (DOF, 2012cl).	2005
Interim Water Supply and Water Quality Infrastructure and Management Subaccount	The Interim Water Supply and Water Quality Infrastructure and Management Subaccount provides grants and loans to local agencies located in the Delta to increase water supply, quality, and enhance water supply reliability (DOF, 2012y).	1999
Marine Invasive Species Control Fund	The Marine Invasive Species Control Fund is utilized to support the Ballast Water Management Program which aims to protect against invasive species that may be carried by vessels arriving at California ports (DOF, 2012ay).	2003
Native Species Conservation and Enhancement Account, Fish and Game Preservation Fund	The Native Species Conservation and Enhancement Account, Fish and Game Preservation Fund, permits the receipt and expenditure of moneys derived through donation from persons or organizations for the support of nongame and native plant species conservation and enhancement programs (DOF, 2012cm).	1977
Oil Spill Prevention and Administration Fund	The Oil Spill Prevention and Administration Fund is used to implement oil prevention programs, to carry out studies for oil spill prevention and response and to finance environmental studies to the effects of oil spills. These fees shall not be used for responding to an oil spill (DOF, 2012cn).	1990
Oil Spill Response Trust Fund	The Oil Response Trust Fund is used to pay for the response, abatement, containment, and rehabilitation from an oil spill in marine waters (DOF, 2012co).	1990
Public Resources Account, Cigarette & Tobacco Products Surtax Fund	The Public Resources Account, Cigarette and Tobacco Products Surtax Fund is a depository for programs to protect, restore enhance, or maintain fish, waterfowl, and wildlife habitat on an equally funded basis, and for programs to enhance state and local park and recreation resources (DOF, 2012az).	1988

Table 9 Funds Accounts that Support CDFW

Funds Account Name	Description of Funds Account	Date Fund Established
Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006	<p>The Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund provides \$5.4 billion in State GO bonds for projects related to (DOF, 2012ad):</p> <ul style="list-style-type: none"> • Safe drinking water • Water quality and supply • Flood control • Waterway and natural resource protection • Water pollution and contamination control • State and local park improvements • Public access to natural resources • Water conservation efforts 	2006
Safe Neighborhood Parks, Clean Water, Clean Air, Coastal Protection Bond Fund	<p>The Safe Neighborhood Parks, Clean Water, Clean Air, Coastal Protection Bond Fund provides funds for the following (DOF, 2012cp):</p> <ul style="list-style-type: none"> • Protect land around lakes, rivers, and streams and the coast to improve water quality and ensure clean drinking water • Protect forests and plant trees to improve air quality • Preserve open space and farmland threatened by unplanned development • Protect wildlife habitats • Repair and improve the safety of state and neighborhood parks 	1999
Salton Sea Restoration Fund	<p>The Salton Sea Restoration Fund provides funding for the following (DOF, 2012cq):</p> <ul style="list-style-type: none"> • Environmental and engineering studies related to the restoration of the Salton Sea and the protection of fish and wildlife dependent on the sea • Implementation of conservation measures necessary to protect the fish and wildlife species dependent on the Salton Sea, including adaptive management measurements • Implementation of the preferred Salton Sea restoration alternative • Administrative, technical, and public outreach costs related to the development and selection of the preferred Salton Sea restoration alternative 	2003
Special Deposit Fund	The Special Deposit Fund is a depository of money collected by the state for specific purposes in instances where no other fund exists to be credited for the money received (DOF, 2012cr).	N/A
Timber Regulation and Forest Restoration Fund	The Timber Regulation and Forest Restoration Fund provides a funding mechanism, based on retail sales of lumber and engineered wood products, to provide for development of ecological performance measures, establish a forest restoration grant program, and require program reporting to the Legislature (DOF, 2012bo).	2012
Upper Newport Bay Ecological Reserve Maintenance and Preservation Fund	The Upper Newport Bay Ecological Reserve Maintenance and Preservation Fund provides funds for the maintenance and preservation of the Upper Newport Bay Ecological Reserve (DOF, 2012cs).	1998
Waste Discharge Permit Fund	The Waste Discharge Permit Fund is a depository for annual fees collected from wastewater dischargers for use in carrying out water	1989

Table 9 Funds Accounts that Support CDFW

Funds Account Name	Description of Funds Account	Date Fund Established
	quality control laws. The total amount of annual fees collected pursuant to this section shall equal that amount necessary to recover costs incurred in connection with the issuance, administration, reviewing, monitoring, and enforcement of waste discharge requirements and waivers of waste discharge requirements (DOF, 2012bu).	
Water Quality, Supply, and Infrastructure Improvement Fund	<p>Proposition 1 finances water projects and programs that will: increase the state's supply of clean, safe, and reliable drinking water, protect and restore rivers, lakes, streams, coastal waters, and watersheds, improve water quality, security, and adaptation to climate change, and improve statewide water system operations to increase drought preparedness and flood protection. Specifically, the fund is appropriated (DOF, 2012ah):</p> <ul style="list-style-type: none"> • \$520 million for Clean and Safe Drinking Water, • \$1.495 billion for Watershed Restoration and Protection, • \$810 million for Regional Water Security • \$2.7 billion for Statewide System operations • \$725 million for Water Recycling • \$900 million for Groundwater Sustainability • \$395 million for Flood Management 	2014
Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002	<p>The Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 provides funds for the following purposes (DOF, 2012ai):</p> <ul style="list-style-type: none"> • Secure and safeguard the integrity of the state's water supply (\$50 million) • Provide a safe, clean, affordable, and sufficient water supply (\$435 million) • Provide adequate financing for balanced implementation of the CALFED Bay-Delta Program (\$825 million) • Establish and facilitate integrated regional water management systems and procedures (\$500 million) • Improve practices within watersheds to improve water quality, reduce pollution, capture additional storm water runoff, protect and manage groundwater better, and increase water use efficiency • Protect urban communities from drought, increase supplies of clean drinking water, reduce dependence on imported water, reduce pollution of rivers, lakes, streams, and coastal waters, and provide habitat for fish and wildlife • Protect, restore, and acquire beaches and coastal uplands, wetlands, and watershed lands along the coast (\$200 million) 	2002
Wildlife Restoration Fund	The Wildlife Restoration Fund provides funds for the Wildlife Conservation Board to acquire lands and construct facilities suitable for recreation and adaptable conservation, propagation, and utilization of fish and game resources (DOF, 2012ct).	1979
Yuba Feather Flood Protection Sub Account	The Yuba Feather Flood Protection Sub Account provides funds for the implementation of flood control projects along the Yuba and Feather Rivers and their tributaries (DOF, 2012aj).	1999

Historical Expenditures

Between 2006 and 2015, total CDFW expenditures averaged approximately \$282 million per year. Of the approximately \$282 million, more than 88 percent of all expenditures were to support ongoing actions, as shown in Table 10. Figure 7 shows the total CDFW capital and ongoing expenditures between 2006 and 2015.

Table 10 CDFW Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$15,825	\$190,618	\$206,443
2007	\$54,589	\$325,335	\$379,924
2008	\$58,908	\$259,536	\$318,444
2009	\$44,854	\$231,941	\$276,795
2010	\$37,676	\$220,086	\$257,762
2011	\$23,739	\$205,379	\$229,118
2012	\$23,618	\$244,779	\$268,397
2013	\$27,694	\$226,108	\$253,802
2014	\$21,825	\$255,973	\$277,798
2015	\$18,687	\$329,447	\$348,134
Average	\$32,742	\$248,920	\$281,662

Source: California Department of Fish and Game (CDFG) 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

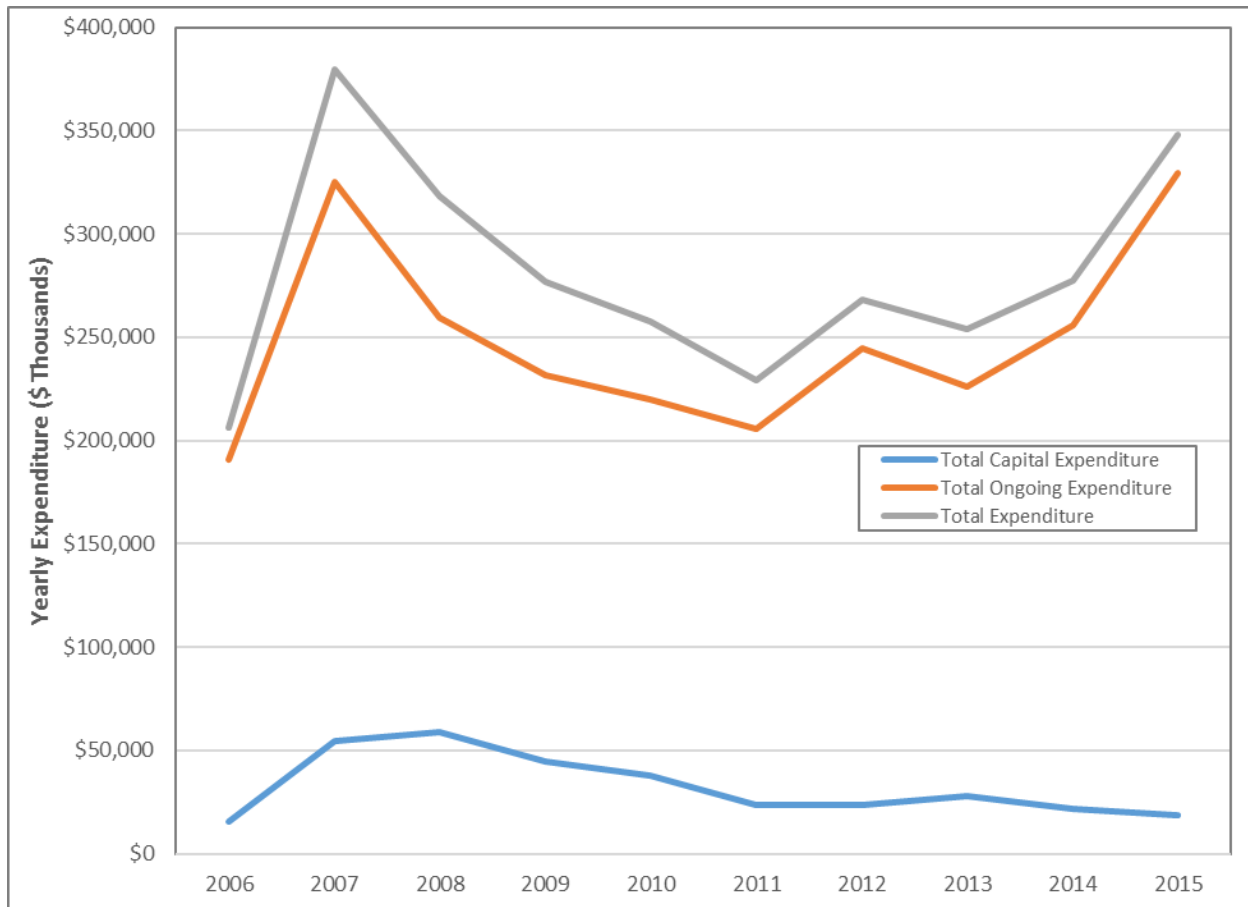


Figure 7 CDFW Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

CDFW Capital Expenditures

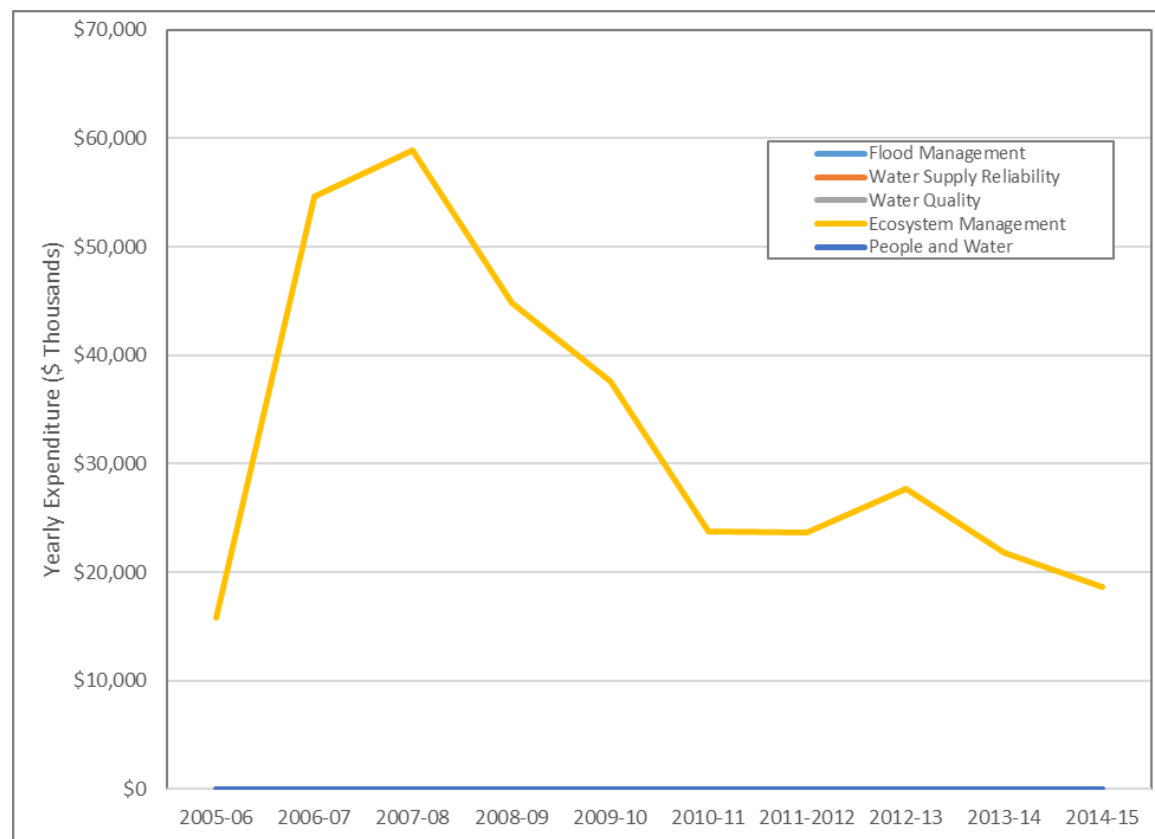
CDFW capital expenditures support ecosystem management, averaging approximately \$33 million per year. Table 11 and Figure 8 show the total capital expenditures between 2006 and 2015 for each of the water sectors. Notable observations of CDFW capital expenditures include:

- From 2006 to 2015, CDFW capital expenditures for ecosystem management fluctuated, with maximum expenditures in 2008 totaling approximately \$59 million, and with a minimum of approximately \$16 million in 2006. The increased funding available in 2008 was from bond funding from the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50).
- There are no CDFW capital flood management, water supply reliability, water quality, and people and water expenditures as these activities are outside the responsibilities of CDFW.

Table 11 CDFW Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$15,825	\$0	\$15,825
2007	\$0	\$0	\$0	\$54,589	\$0	\$54,589
2008	\$0	\$0	\$0	\$58,908	\$0	\$58,908
2009	\$0	\$0	\$0	\$44,854	\$0	\$44,854
2010	\$0	\$0	\$0	\$37,676	\$0	\$37,676
2011	\$0	\$0	\$0	\$23,739	\$0	\$23,739
2012	\$0	\$0	\$0	\$23,618	\$0	\$23,618
2013	\$0	\$0	\$0	\$27,694	\$0	\$27,694
2014	\$0	\$0	\$0	\$21,825	\$0	\$21,825
2015	\$0	\$0	\$0	\$18,687	\$0	\$18,687
Average	\$0	\$0	\$0	\$32,742	\$0	\$32,742

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

**Figure 8** CDFW Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

CDFW Ongoing Expenditures

CDFW ongoing expenditures predominantly fund the ecosystem management water sector, as well as supporting some flood management, water quality, and people and water management actions. In total, CDFW ongoing expenditures average approximately \$249 million per year. 2015 had the highest ongoing expenditures over the 10-year period, totaling approximately \$329 million, with the lowest ongoing expenditures occurring in 2006, totaling more than \$191 million. Table 12 and Figure 9 show the total ongoing expenditures between 2006 and 2015 for each of the water sectors.

Table 12 CDFW Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$5,775	\$0	\$12,943	\$171,901	\$0	\$190,619
2007	\$4	\$0	\$13,164	\$312,165	\$2	\$325,335
2008	\$3,725	\$5	\$19,651	\$236,153	\$1	\$259,535
2009	\$0	\$0	\$16,462	\$214,868	\$612	\$231,942
2010	\$0	\$0	\$11,873	\$207,361	\$853	\$220,087
2011	\$0	\$0	\$10,248	\$194,016	\$1,116	\$205,380
2012	\$0	\$0	\$16,505	\$227,302	\$973	\$244,780
2013	\$0	\$0	\$13,853	\$210,801	\$1,455	\$226,109
2014	\$0	\$0	\$18,130	\$234,445	\$3,398	\$255,973
2015	\$0	\$0	\$17,359	\$307,447	\$4,642	\$329,448
Average	\$950	\$1	\$15,019	\$231,646	\$1,305	\$248,921

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

Notable observations for CDFW ongoing expenditures include:

- Ongoing expenditures for flood management actions were less than 0.5 percent of total CDFW ongoing expenditures. In addition, out of the 10-year period, only two years have flood management expenditures primarily funded by the Yuba Feather Flood Protection Sub Account, Central Valley Project Improvement Sub Account, and the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Fund (Proposition 13).
- Ongoing expenditures for water supply reliability occurred once in 2008, totaling approximately \$5,000 from Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Fund (Proposition 13).
- From 2006 to 2015, water quality ongoing expenditures remained relatively stable, averaging approximately \$15 million per year due to funding from the Oil Spill Prevention and Administration Fund. Maximum expenditures occurred in 2008, totaling more than \$19 million, with minimum expenditures occurring in 2011 (approximately \$10 million). The peak in funding in 2008 is due to increased funding from the Oil Spill Prevention and Administration Fund and the Salton Sea Restoration Fund.
- Approximately 95 percent of total CDFW ongoing expenditures supported the ecosystem management water sector, averaging approximately \$232 million per year. An increase in State general fund funding for CDFW caused ongoing expenditures to increase in 2007 to a maximum of \$312 million, up from a minimum of approximately \$172 million in the year before. Funding for ecosystem management actions is funded by the State GF, a number of designated funds (such

as the Fish and Game Preservation Fund, Oil Spill Prevention and Administration Fund, and Hatchery and Inland Fisheries Fund) as well as a number of bonds including the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50) and the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84)

- Minimal CDFW ongoing expenditures supported the people and water sector, averaging \$1.3 million per year. CDFW expenditures for people and water ongoing management actions came from the Harbors and Watercraft Revolving Fund and the Timber Regulation and Forest Restoration Fund.

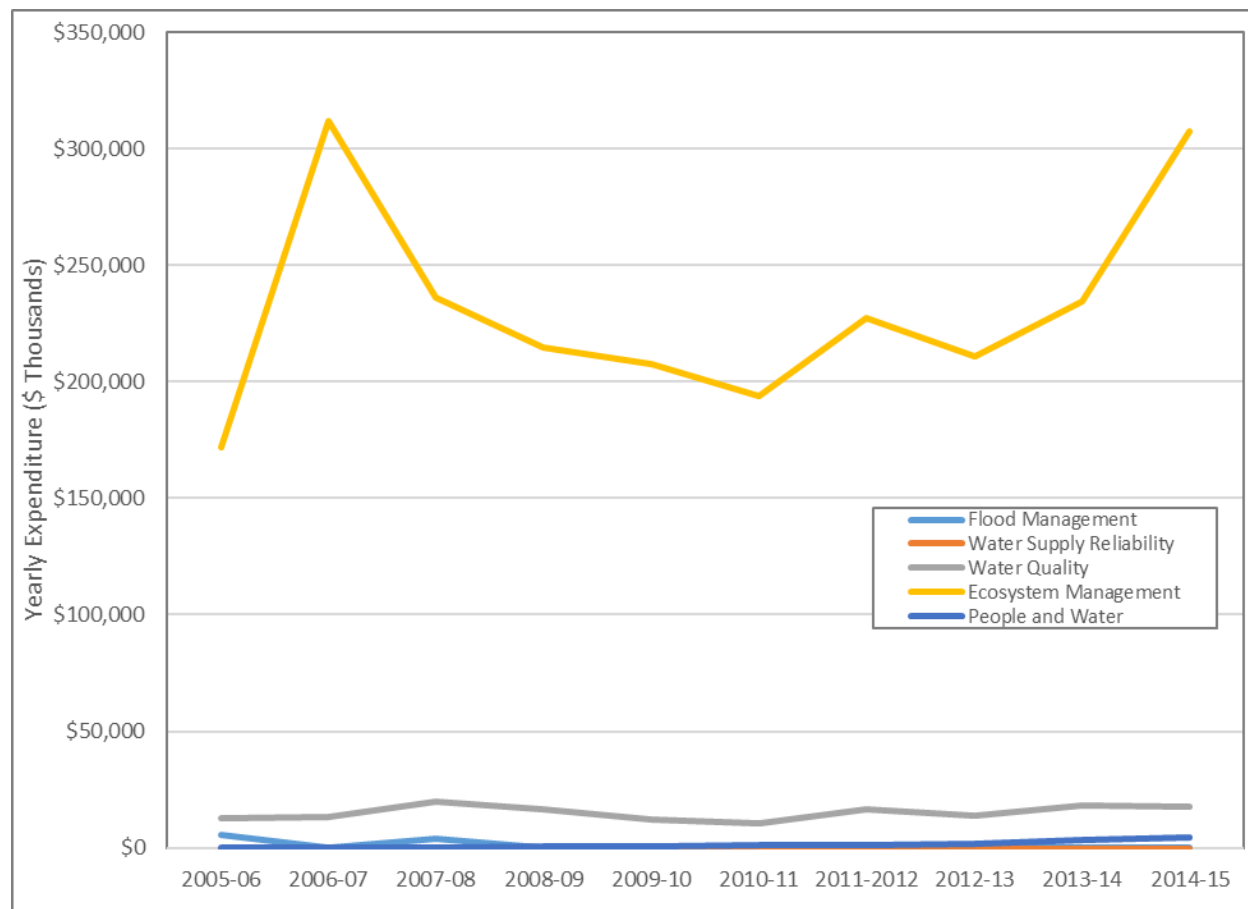


Figure 9 CDFW Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

Total State Agency Expenditures

State agencies expenditures are comprised of DWR, SWRCB, and CDFW expenditures. Between 2006 and 2015, total State expenditures averaged more than \$6.8 billion per year, with an annual average of more than \$1.5 billion for capital and \$5.3 billion for ongoing management actions. Ongoing expenditures accounted for more than 75 percent of the total expenditures. Table 13 shows capital, ongoing, and total State agencies expenditures between 2006 and 2015. Figure 10 shows the total state agencies expenditures.

Table 13 State Agencies Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$1,151,279	\$6,487,757	\$7,639,036
2007	\$1,107,294	\$7,313,905	\$8,421,199
2008	\$1,565,192	\$7,140,610	\$8,705,802
2009	\$1,546,540	\$6,517,247	\$8,063,787
2010	\$1,625,614	\$6,403,491	\$8,029,105
2011	\$1,723,228	\$5,655,884	\$7,379,112
2012	\$1,588,144	\$4,147,488	\$5,735,632
2013	\$1,703,665	\$2,710,142	\$4,413,807
2014	\$1,746,129	\$2,955,869	\$4,701,998
2015	\$1,753,102	\$3,757,654	\$5,510,756
Average	\$1,551,019	\$5,309,005	\$6,860,023

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

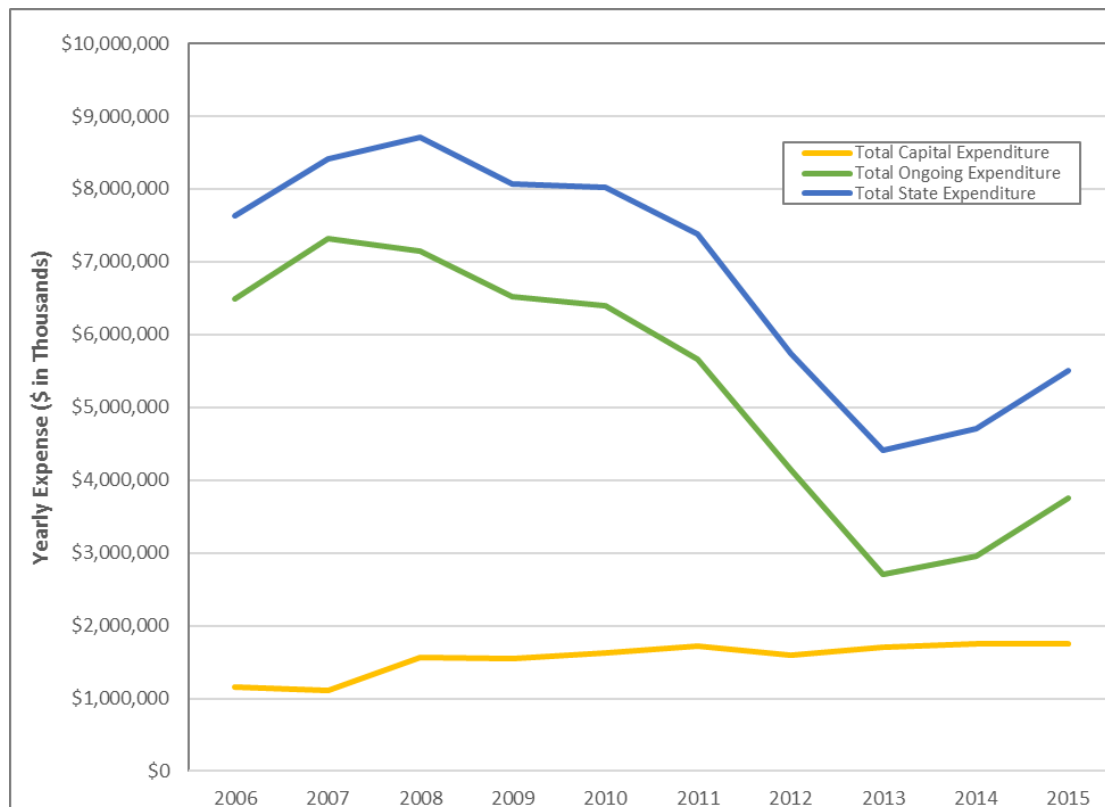


Figure 10 State Agencies Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

Total State Agencies Capital Expenditures

Total State agencies capital expenditures averaged more than \$1.5 billion per year. From 2006 to 2015, maximum expenditures occurred in 2015, totaling \$1.8 billion, minimum expenditures occurred in 2007 totaling \$1.1 billion. Table 14 and Figure 11 show State agencies capital expenditures between 2006 and 2015 by water sector.

Table 14 State Agencies Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$39,517	\$360,770	\$442,343	\$153,225	\$155,424	\$1,151,279
2007	\$24,833	\$345,657	\$433,757	\$151,161	\$151,886	\$1,107,294
2008	\$258,478	\$410,540	\$517,674	\$266,121	\$112,379	\$1,565,192
2009	\$415,846	\$375,906	\$434,875	\$188,547	\$131,364	\$1,546,538
2010	\$701,872	\$235,225	\$411,281	\$160,359	\$116,877	\$1,625,614
2011	\$694,213	\$233,074	\$558,732	\$128,944	\$108,265	\$1,723,228
2012	\$632,847	\$209,743	\$516,366	\$123,513	\$105,677	\$1,588,146
2013	\$762,456	\$214,678	\$516,479	\$118,614	\$91,437	\$1,703,664
2014	\$864,404	\$221,473	\$470,749	\$100,530	\$88,974	\$1,746,130
2015	\$802,356	\$244,283	\$483,027	\$118,215	\$105,222	\$1,753,103
Average	\$519,682	\$285,135	\$478,528	\$150,923	\$116,750	\$1,551,019

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

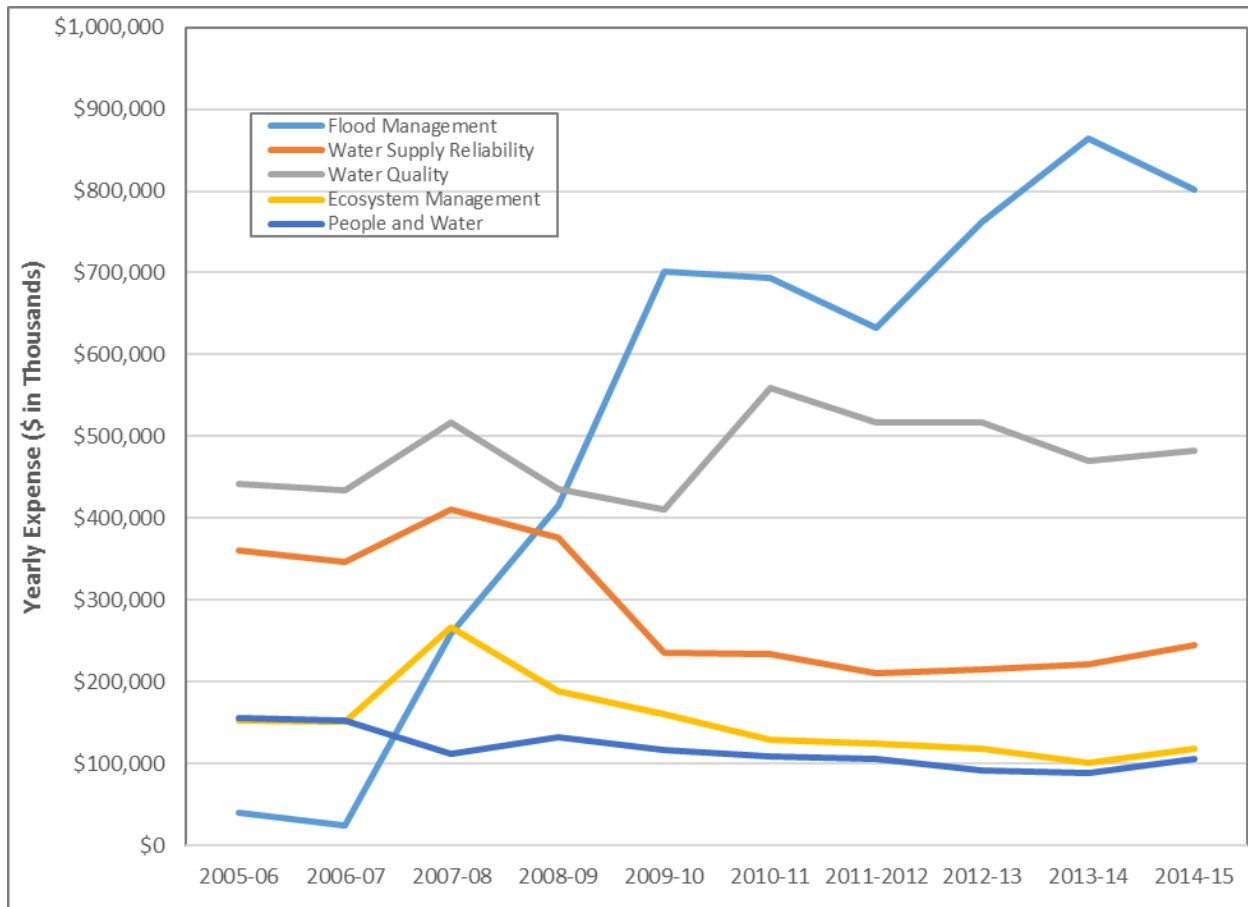


Figure 11 State Agencies Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: CDFG, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

Notable observations of the total State agencies capital expenditures include:

- Approximately 35 percent of total State agencies capital expenditures supported flood management actions, averaging approximately \$520 million per year. Flood management actions have generally increased over the 10-year timeframe due to the issuance of bond funding following the passage of legislation in 2007. Flood management capital expenditures fluctuated between 2010 and 2015, with maximum expenditures occurring in 2014, totaling \$864 million, and minimum expenditures of approximately \$25 million in 2007. Flood management capital expenditures were from DWR.
- Total State agencies capital expenditures for water supply reliability management actions were approximately 20 percent of the total capital expenditures, averaging more than \$285 million per year. Water supply reliability capital expenditures were consistent due to the availability of funding from bonds such as the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50), as well as a number of designated funds such as the Central Valley Water Project Revenue Fund. However, funding availability peaked for water

supply reliability expenditures in 2008, totaling approximately \$411 million due to the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50).

- Capital expenditures for water quality management actions averaged approximately \$480 million per year. Overall, capital expenditures for water quality management stayed stable, with minimum expenditures occurring in 2010 (totaling approximately \$411 million) and a high of \$559 million in 2011 driven by increased funding from the Underground Storage Tank Cleanup Fund.
- Approximately ten percent of total State agencies capital expenditures were for the ecosystem management water sector, averaging approximately \$151 million per year. Maximum expenditures occurred in 2008, totaling \$266 million driven by expenditures from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84) and the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50), with the minimum expenditures occurring in 2010 totaling \$100 million when the availability of bond funds decreased.
- People and water capital expenditures averaged more than \$117 million per year. The highest expenditures during the 10-year period were in 2006 driven by the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Fund (Proposition 40). Expenditures generally decreased after 2006 with slight rebounds in 2009 and 2015 driven by bond funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84).

Total State Agencies Ongoing Expenditures

Total State agencies ongoing expenditures averaged \$5.3 billion per year, with a maximum of approximately \$7.3 billion in 2007 and a minimum of approximately \$2.7 billion in 2013. From 2007 through 2014, ongoing expenditures decreased. A majority of the ongoing expenditures, more than 80 percent of all ongoing expenditures, supported the water supply reliability water sector. Table 15 and Figure 12 show the total State agencies ongoing expenditures between 2006 and 2015 by water sectors.

Table 15 State Agencies Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$42,635	\$5,962,346	\$150,687	\$304,445	\$27,644	\$6,487,757
2007	\$51,785	\$6,540,857	\$194,447	\$490,392	\$36,423	\$7,313,904
2008	\$78,619	\$6,339,450	\$215,959	\$447,418	\$59,164	\$7,140,610
2009	\$288,981	\$5,409,272	\$232,958	\$451,816	\$134,221	\$6,517,248
2010	\$413,012	\$5,152,537	\$206,625	\$443,012	\$188,305	\$6,403,491
2011	\$401,027	\$4,451,931	\$200,785	\$423,721	\$178,420	\$5,655,884
2012	\$375,947	\$3,070,743	\$141,696	\$404,423	\$154,678	\$4,147,487
2013	\$229,061	\$1,938,836	\$114,671	\$335,290	\$92,285	\$2,710,143
2014	\$216,732	\$2,195,305	\$109,622	\$339,681	\$94,528	\$2,955,868
2015	\$188,530	\$2,667,400	\$200,348	\$522,291	\$179,084	\$3,757,653
Average	\$228,633	\$4,372,868	\$176,780	\$416,249	\$114,475	\$5,309,005

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

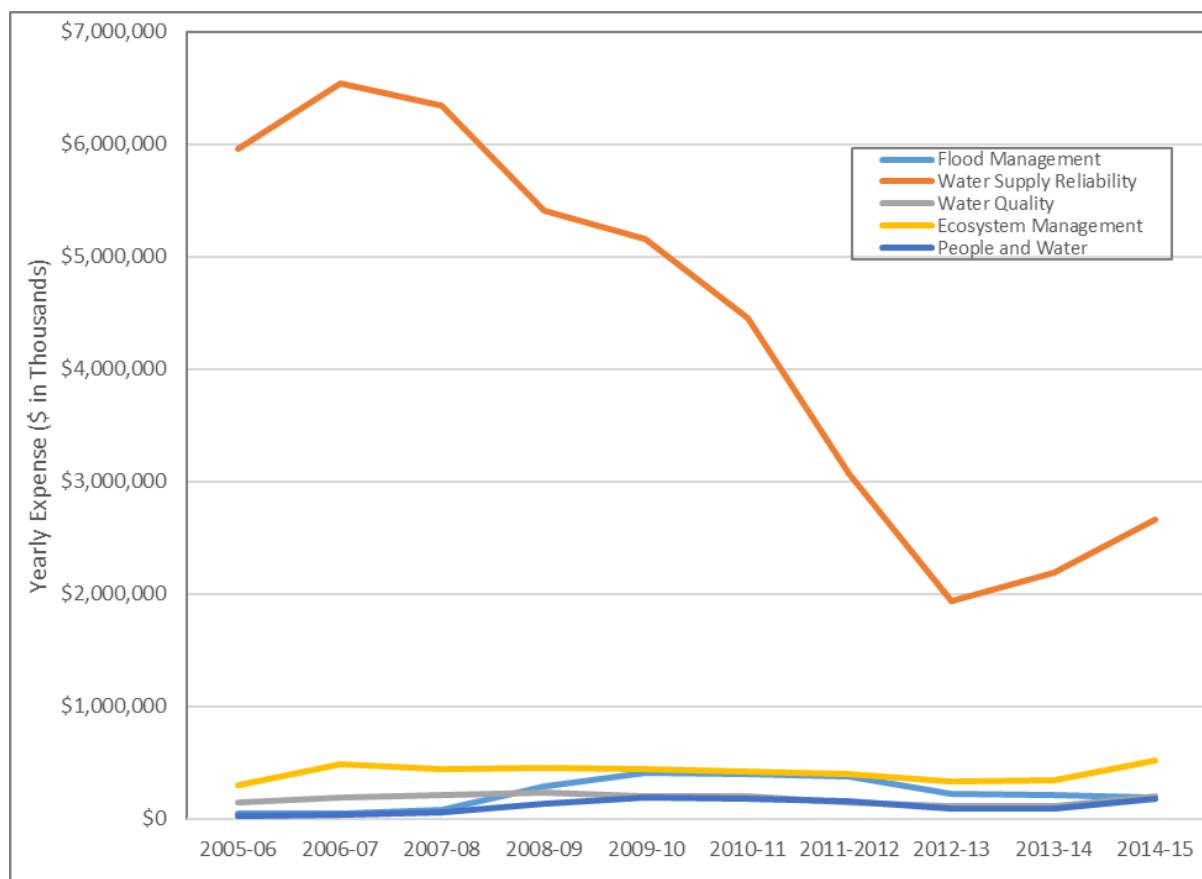


Figure 12 State Agencies Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j

Notable observations of total State agencies ongoing expenditures include:

- Total State agencies ongoing expenditures for flood management actions were less than five percent of the total ongoing expenditures, averaging approximately \$229 million per year. Flood management ongoing expenditures reached their highest in 2010 (approximately \$413 million) before steadily declining over time to \$189 million per year in 2015. This decline was a result of reduced general fund availability coupled with funding from bonds diminishing over time.
- More than 80 percent of all total State agencies ongoing expenditures supported water supply reliability management actions, averaging approximately \$4.4 billion per year. The expenditures for water supply reliability ongoing actions were the highest in 2007 (more than \$6.5 million per year) driven by payouts from the Department of Water Resources Electric Power Fund which declined over time.
- The share of ongoing expenditures going to water quality projects is only 3 percent with an average of \$177 million. Expenditures for water quality have remained consistent ranging from a

low in 2014 of \$110 million per year to a high in 2009 of more than \$230 million per year. A majority of the funding for this water sector was derived from bond funding such as the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84).

- Ongoing expenditures on ecosystem management accounted for 8 percent the total ongoing expenditures during the period with an average of \$416 million. Expenditures spiked in 2007 at \$490 million per year primarily coming from the general fund before decreasing over time between 2008 and 2014. In 2015 expenditures were at a ten- year high (\$522 million per year) driven by bond funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84).
- Ongoing expenditures on projects that benefit people and water fluctuated during this time with an average of \$114 million, which is approximately 2 percent of the total ongoing expenditures. Expenditures for people and water peaked between 2009 and 2012 at a high of more than \$188 million per year (2010) and again in 2015 (\$179 million per year) due to bond funding from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006 (Proposition 84).

Debit Service on State General Obligation Bonds

GO bonds require repayment of principal and interest over time, which is repaid by through the state GF. From 2006 to 2015, the total of the State's average annual expenditures for water resources management from the State GF (including expenditures for principal and interest on GO bonds) was approximately \$2.4 billion as shown in Table 16. Also, the total State GF budget averaged \$96 billion per year. State expenditures from the State GF (including expenditures for GO bonds) for water resources management accounted for approximately two percent of the annual State general fund budget. Because the State General Fund serves a vast array of critical needs, and GO bonds are subject to voter approval and debt service limitations (for Fiscal Year [FY] 2016–2017 debt service on water GO bonds was \$1 billion), water resource funding is subject to competing and shifting priorities. Historical annual maximum expenditures from local agencies for water resources management are:

- State GF: \$466 million in 2007
- State GO Bond: \$2,238 million in 2010
- Interest on GO Bonds: \$695 million in 2013

Debt service on State GO bonds is comprised of principle repayments, or redemption, and interest payments. The typical financing terms on State GO bonds are a three to five percent interest rate over a 30- to 40-year repayment period. Administrative capacity, eligibility requirements, and regulations result in a lag between authorization of GO bond sales and actual expenditures. This time lag can cause bond repayments to go beyond 30 years from the original date of authorization. Between 2006 and 2015, interest on State GO Bonds for water resources averaged \$491 million per year. During this period, interest payments were larger than redemption, averaging \$200 million and \$700 million per year on average, respectively. On average, from 2006 to 2015, less than 2.5 percent of annual State budget was allocated for water resource management (including State General Fund, general obligation. The debt service from 2006 to 2015 is largely for State GO bonds authorized in 2000 (Proposition 12 - Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000), 2002 (Proposition 50 - Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 and Proposition 40 - California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Fund), and 2006 (Proposition 1E - Disaster Preparedness and Flood Prevention Bond Fund of 2006 and

Proposition 84 Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Fund of 2006; California Department of Finance, 2018). In addition, the State continues to make debt service payments for water-related State GO bonds authorized before 2000. Figure 13 shows the total authorized amount by the Proposition language, total interest paid on all issued bond funding, and redemption (or principal repayment) for water resources management related State GO bonds. Figure 14 shows the debt service on water related State GO bonds.

Table 16 Expenditures from State General Fund, State General Obligation Bonds, and Interest on Water Related State General Obligation Bond Debt ((\$ in millions)

State Water Related Funding Mechanism	2006	2007	2008	2009	2010	2011	20-12	2013	2014	2015	Average - (2006 to 2015)
State General Fund	\$287	\$466	\$343	\$273	\$194	\$223	\$188	\$189	\$197	\$279	\$264
General Obligation Bonds	\$763	\$864	\$1,438	\$1,819	\$2,238	\$2,087	\$1,841	\$1,610	\$1,615	\$1,870	\$1,615
Interest for General Obligation Bond Debt	\$208	\$281	\$259	\$315	\$471	\$667	\$655	\$695	\$691	\$668	\$491
Annual Water-Related General Fund Expenditures	\$1,259	\$1,610	\$2,040	\$2,407	\$2,903	\$2,977	\$2,684	\$2,495	\$2,504	\$2,817	\$2,370
Total State General Fund	\$91,592	\$101,413	\$102,986	\$90,940	\$87,237	\$91,549	\$86,404	\$96,562	\$100,005	\$113,448	\$96,213

Note:

Water- related State GF expenditures are 2.5 percent of total State GF expenditures.

Source: CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, and 2015d; State of California Governor's Budget, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; State of California, 2016a, 2016b, 2016c, 2016d, 2016e, 2016f, 2016g, 2016h, 2016i, and 2016j

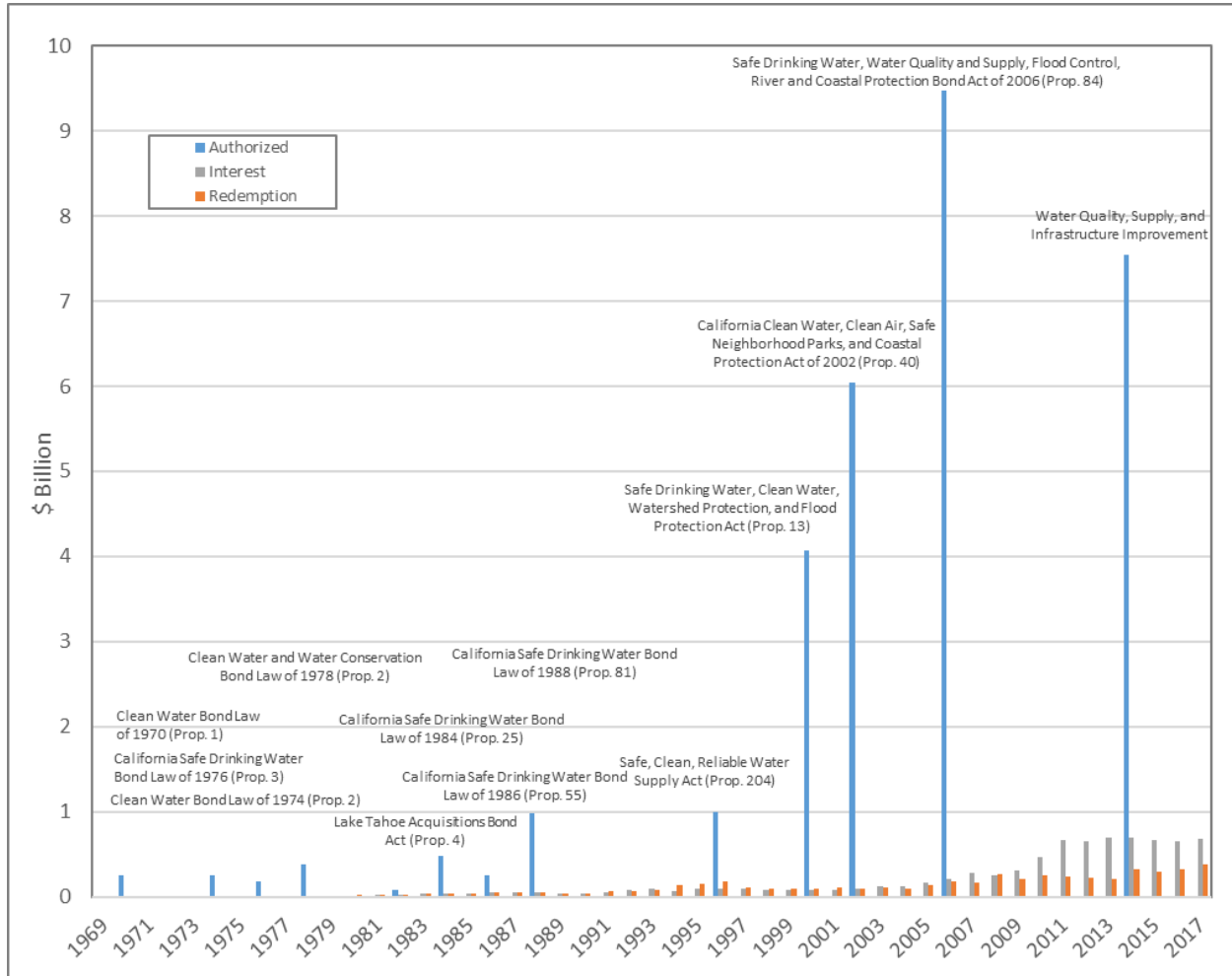


Figure 13 State General Obligation Bonds - Authorization versus Repayment

Note: Authorization is the total amount authorized by the Proposition language, Interest is the interest paid for all issued bond funds, and redemptions is the principal repayment on issued bond funds.

Source: State of California, 2016a, 2016b, 2016c, 2016d, 2016e, 2016f, 2016g, 2016h, 2016i, and 2016j

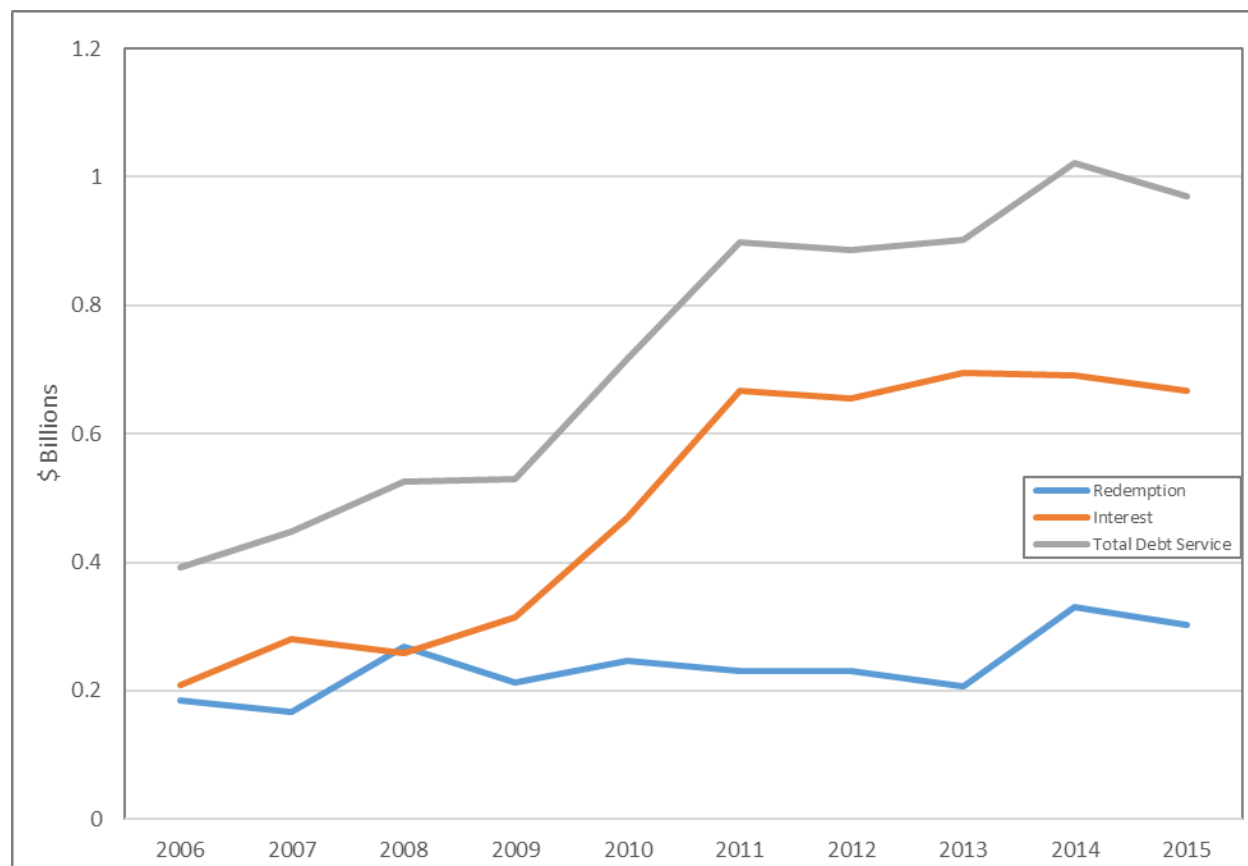


Figure 14 Debt Service on Water Related State General Obligation Bonds (2006-2015)

Note: Debt service is comprised of principle repayments, or redemption, and interest payments.

Source: State of California, 2016a, 2016b, 2016c, 2016d, 2016e, 2016f, 2016g, 2016h, 2016i, and 2016j

Historical Local Agency Expenditures

In California, there are currently over 2,250 local agencies that participate in water resources management. Historical expenditure data was collected for counties, cities, and special districts from the California State Controller's Office. Local expenditures include administrative and other ongoing operation and maintenance expenditures as well as large, one-time capital expenditures. The information available on local agencies is self-reported by cities, counties, and special districts into a specified format that may or may not match the expenditure and budget reporting classification or categories used by the agencies. For this reason, there is some variability in the year to year data from specific agencies.

Counties

Water resources management expenditures at the county level are primarily for ongoing operations and construction of infrastructure. Large, one-time capital expenditures account for a smaller percentage of local expenditures. Specific county public services include public protection (flood control emergency services, fire suppression, and planning and zoning), public facilities, sanitation, recreational, and cultural services. Based on the specific department or service area, the expenditures were categorized into flood management, water supply reliability, water quality, ecosystem management, or people and water.

Total County Expenditures

Data for California county expenditures on water resource management for 2006 through 2015 were collected from the State Controller's Office (SCO, 2017b). During this time, total county expenditures averaged more than \$1.2 billion a year, averaging approximately \$42 million for capital expenditures and approximately \$1.18 billion for ongoing expenditures. Table 17 shows capital, ongoing, and total county expenditures between 2006 and 2015.

Total county expenditures have trended upwards, with most of the increases associated with ongoing expenditures. Capital expenditures have steadily increased between 2006 and 2015, except for declines in 2008 and 2015. During this period, ongoing expenditures also steadily increased, except for a decline in 2011 and 2012, before recovering in 2013. County capital expenditures on water resources management are not only related to the availability of State and Federal assistance programs, but also economic conditions at the county level. The declines in expenditure coincide with the Great Recession. Figure 15 shows the total county capital and ongoing expenditures between 2006 and 2015.

Table 17 County Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$18,304	\$981,007	\$999,311
2007	\$29,766	\$1,149,370	\$1,179,136
2008	\$26,522	\$1,188,163	\$1,214,685
2009	\$34,278	\$1,195,634	\$1,229,912
2010	\$37,739	\$1,194,568	\$1,232,307
2011	\$37,587	\$1,158,848	\$1,196,435
2012	\$45,860	\$1,157,195	\$1,203,055
2013	\$64,434	\$1,230,113	\$1,294,547
2014	\$67,942	\$1,271,988	\$1,339,930
2015	\$52,889	\$1,264,826	\$1,317,715
Average	\$41,532	\$1,179,171	\$1,220,703

Source: California State Controller's Office (SCO), 2016b

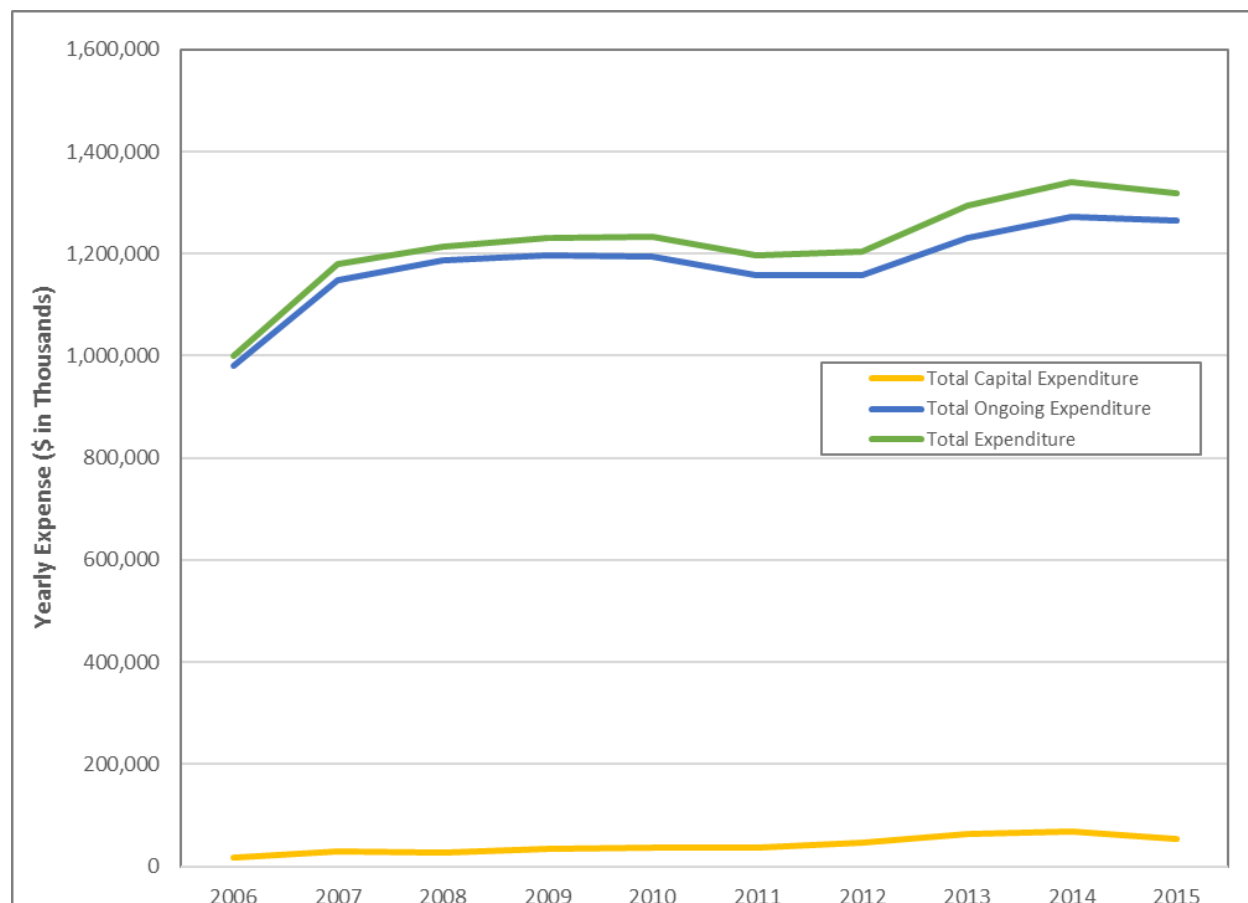


Figure 15 County Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: SCO, 2016b

County Capital Expenditures

Between 2006 and 2015, average annual county capital expenditures were approximately \$42 million. Maximum capital expenditures were approximately \$68 million in 2014, and minimum capital expenditures were more than \$18 million in 2006. The majority of county capital expenditures were for water quality and flood management actions. Table 18 and Figure 16 show county capital expenditures between 2006 and 2015, separated by water sector.

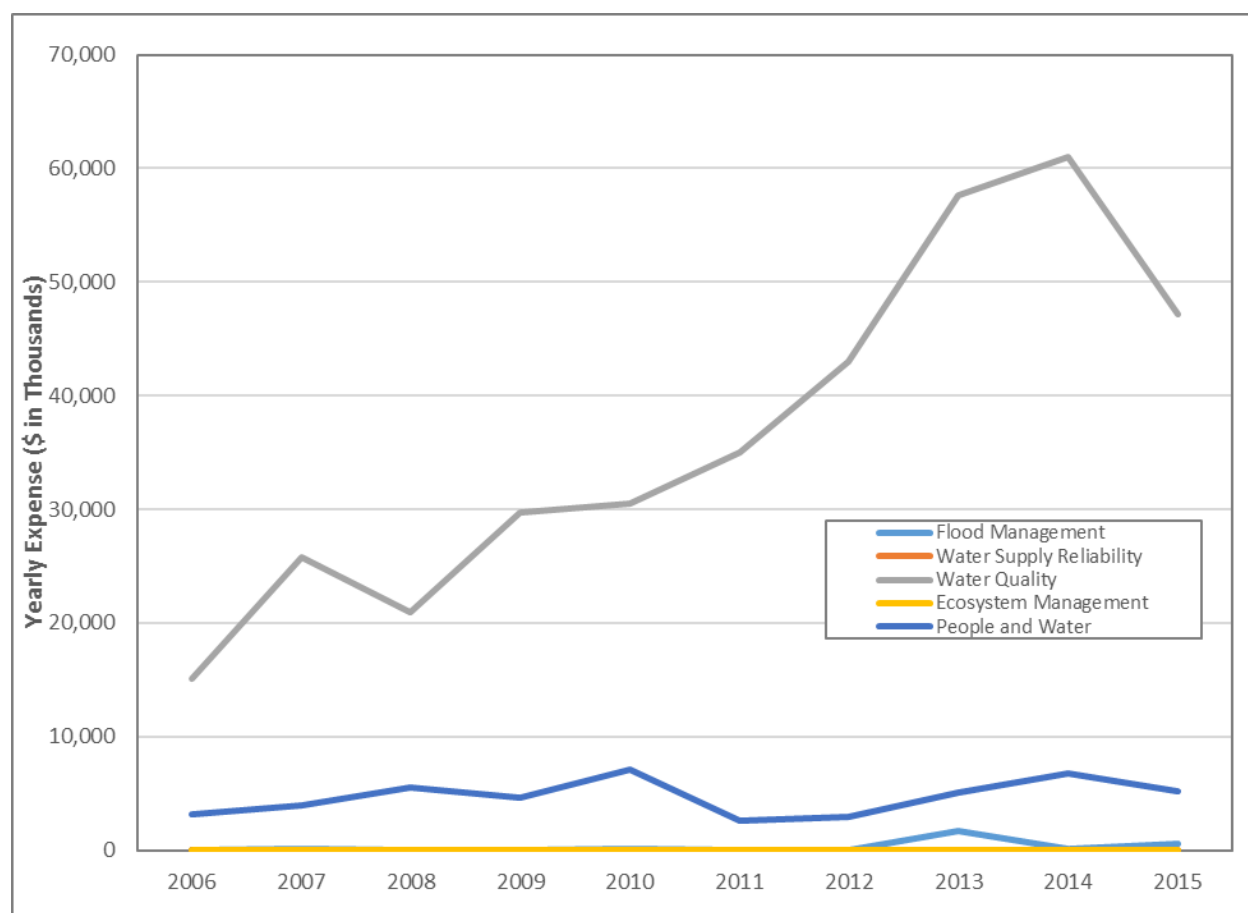
Table 18 County Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$3	\$0	\$15,127	\$0	\$3,173	\$18,303
2007	\$92	\$0	\$25,733	\$0	\$3,942	\$29,767
2008	\$1	\$0	\$20,968	\$0	\$5,553	\$26,522
2009	\$0	\$0	\$29,673	\$0	\$4,604	\$34,277
2010	\$102	\$0	\$30,524	\$0	\$7,113	\$37,739
2011	\$1	\$0	\$35,022	\$0	\$2,564	\$37,587

Table 18 County Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2012	\$1	\$0	\$42,954	\$0	\$2,906	\$45,861
2013	\$1,671	\$0	\$57,646	\$0	\$5,116	\$64,433
2014	\$163	\$0	\$60,960	\$0	\$6,819	\$67,942
2015	\$577	\$0	\$47,115	\$0	\$5,197	\$52,889
Average	\$261	\$0	\$36,572	\$0	\$4,699	\$41,532

Source: SCO, 2016b

**Figure 16** County Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: SCO, 2016b

Notable observations of capital expenditures during this period include:

- Flood management capital expenditures funded flood control and soil and water conservation efforts. Maximum expenditures for capital flood management actions was in 2013 (totaling more

than \$1.6 million). The amount of funding available in this category may be low as capital expenses may have been accounted for by the county under a different capital actions type.

- Counties did not have capital expenditures in the water supply reliability water sector as the responsibility for this action typically falls to cities or special districts.
- Water quality capital expenditures include storm water quality and wastewater management actions. County expenditures in this water sector steadily increased from 2006 to 2014, before declining in 2015.
- Counties did not have capital expenditures in the ecosystem management water sector as counties are not typically responsible for these actions and may not separate ecosystem related expenditures from other management actions for reporting purposes.
- People and water includes expenditures on water-related recreational facilities. County expenditures fluctuated during the period, from approximately \$3 million in 2006, to a high of \$7.1 million in 2010, before declining to approximately \$2.5 million in 2011 and increasing again in 2014 to \$6.8 million. These fluctuations were likely to due to local cost shares for available bond funding.

County Ongoing Expenditures

County ongoing expenditures include expenditures for both administration costs and operations and maintenance (O&M). Between 2006 and 2015, the average annual ongoing expenditures was approximately \$1.18 billion. Maximum county ongoing expenditures for water resources management was approximately \$1.3 billion in 2014, and the minimum was approximately \$1 billion in 2006. Approximately 97 percent of annual ongoing county expenditures was for O&M activities. Ongoing expenditures steadily increased from approximately \$1 billion in 2006 to \$1.2 billion in 2009 before decreasing. Table 19 and Figure 17 show county ongoing expenditures by water sector between 2006 and 2015.

Table 19 County Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$415,116	\$324	\$161,345	\$0	\$404,223	\$981,008
2007	\$482,908	\$381	\$213,829	\$0	\$452,252	\$1,149,370
2008	\$501,628	\$795	\$198,248	\$0	\$487,492	\$1,188,163
2009	\$470,777	\$975	\$224,608	\$0	\$499,274	\$1,195,634
2010	\$466,533	\$930	\$223,788	\$0	\$503,317	\$1,194,568
2011	\$453,293	\$1,468	\$242,315	\$0	\$461,773	\$1,158,849
2012	\$434,998	\$1,360	\$269,596	\$0	\$451,242	\$1,157,196
2013	\$421,684	\$1,188	\$325,907	\$0	\$481,334	\$1,230,113
2014	\$415,717	\$837	\$349,692	\$0	\$505,742	\$1,271,988
2015	\$438,186	\$843	\$293,659	\$0	\$532,138	\$1,264,826
Average	\$450,084	\$910	\$250,299	\$0	\$477,879	\$1,179,172

Source: SCO, 2016b

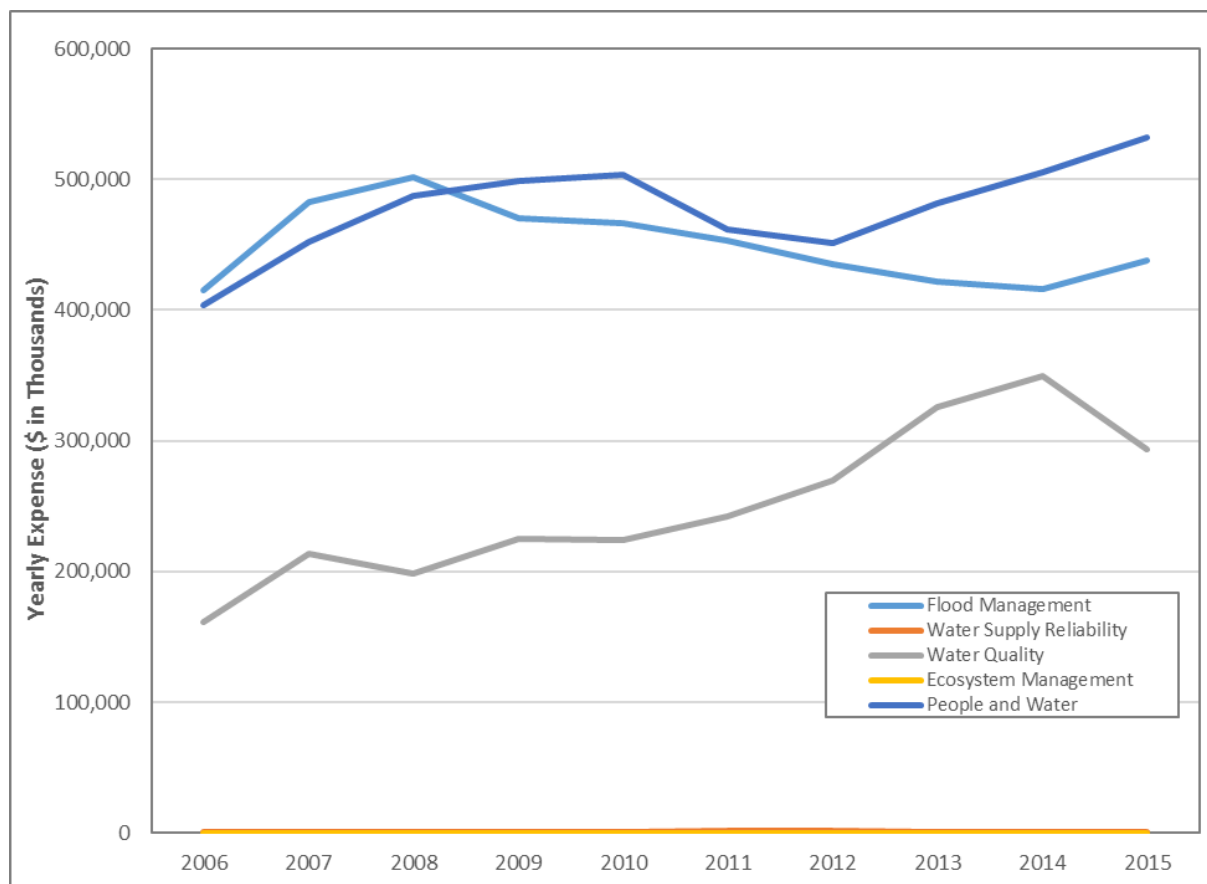


Figure 17 County Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: SCO, 2016b

Notable observations of ongoing expenditures during this period include:

- County ongoing flood management expenditures contributed to 40 percent of the total expenditures, with an average of \$450 million per year. These expenditures have been between \$415 million in 2006 and more than \$500 million in 2008.
- Ongoing expenditures related to water supply reliability are low when compared to other water sectors because cities and special districts are primarily responsible for these actions. Water supply reliability ongoing expenditures averaged approximately \$910,000 per year, which is less than one tenth of one percent of the yearly total for ongoing expenditures.
- County ongoing water quality expenditures were 20 percent of the total ongoing expenditures, with an average of \$250 million per year during the period. Ongoing expenditures on water quality management actions typically trended upwards, increasing from more than \$160 million in 2006 to \$350 million in 2014, with small dips in 2008 and 2015.
- Counties did not have ongoing expenditures in the ecosystem management water sector because discrete accounting is not done for these actions.
- County ongoing people and water expenditures contributed to 40 percent of the total expenditures with an average of approximately \$480 million. These expenditures have ranged from more than \$400 million in 2006 to more than \$530 million in 2015, trending up except in 2011 and 2012.

Cities

At the city level, funding related to water resources management is primarily used for construction and ongoing operations of specific city public services (such as public health, water, sanitation, or other public facilities). Expenditures related to these public services are typically captured in the water, sewer, transit, and other enterprise accounts¹. Additionally, some of water resources-related expenditures are also included in transportation and public utilities accounts. Expenditures for city public services were grouped into the flood management, water supply reliability, water quality, ecosystem management, and people and water sectors

Total City Expenditures

Data for California city expenditures on water resources management for 2006 through 2015 were collected from the State Controller's Office (SCO, 2017a). Figure 18 shows the total city capital and ongoing expenditures between 2006 and 2015. During this time, total city expenditures averaged approximately \$14 billion per year, with an average of approximately \$3 billion for capital and approximately \$11 billion for ongoing expenditures. On average, ongoing expenditures accounted for approximately 80 percent of the total city expenditures. Table 20 shows capital, ongoing, and total city expenditures between 2006 and 2015. Overall, total expenditures have been trending upwards, with most of the increases associated with ongoing expenditures. The only exception was in 2010, when total expenditures declined by 7 percent from preceding year.

Table 20 City Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$2,082,907	\$8,121,047	\$10,203,954
2007	\$2,545,270	\$9,854,217	\$12,399,487
2008	\$2,671,095	\$10,252,177	\$12,923,272
2009	\$2,668,806	\$10,690,756	\$13,359,562
2010	\$2,602,859	\$9,841,086	\$12,443,945
2011	\$3,216,324	\$10,926,475	\$14,142,799
2012	\$3,388,152	\$11,438,517	\$14,826,669
2013	\$3,636,156	\$12,117,503	\$15,753,659
2014	\$3,825,000	\$12,808,958	\$16,633,958
2015	\$3,925,561	\$12,942,489	\$16,868,050
Average	\$3,056,213	\$10,899,323	\$13,955,536

Source: SCO, 2016a

¹ Enterprise accounts separate and apart from other governmental funds, with their own assets and liabilities related to the service the fund supports (SCO, 2016c).

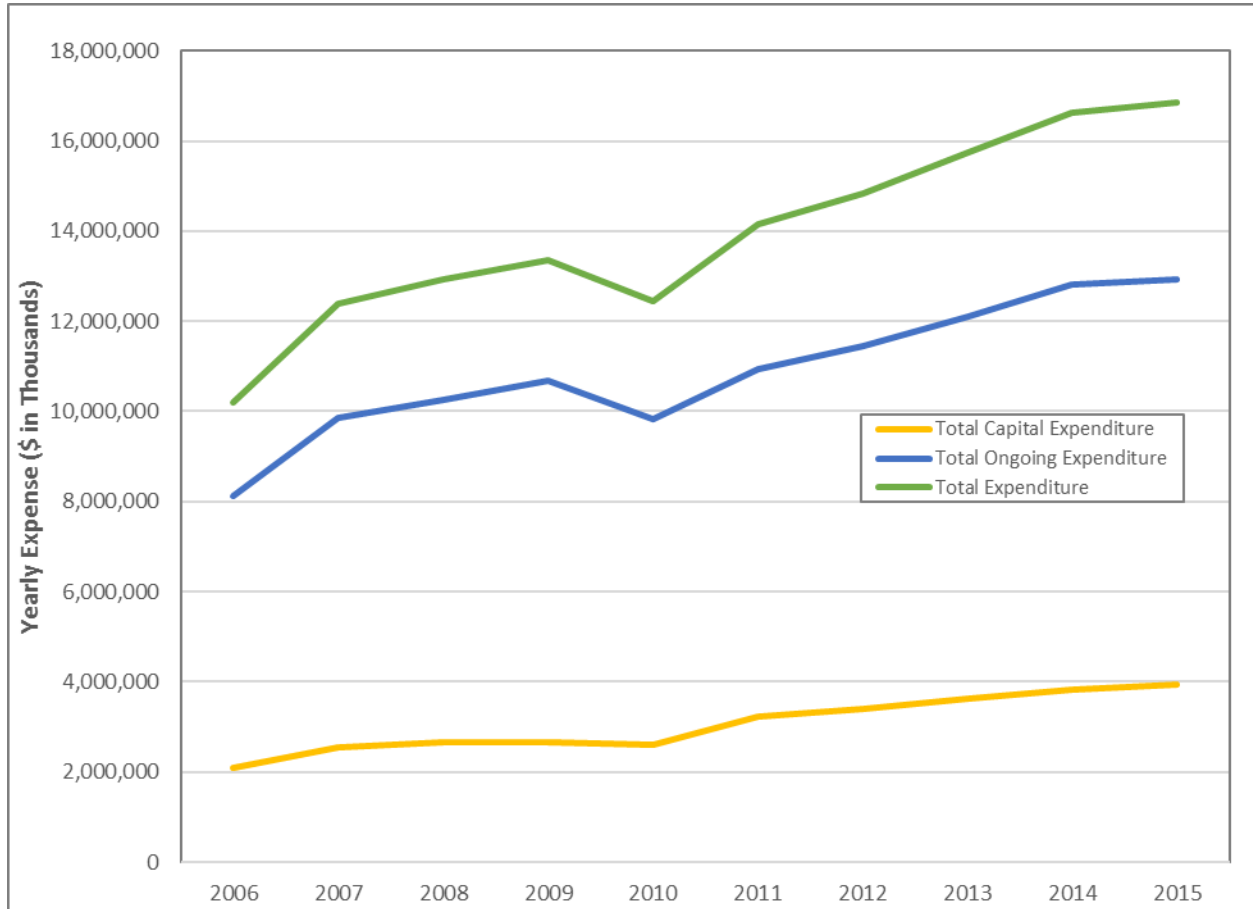


Figure 18 City Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: SCO, 2016a

City Capital Expenditures

From 2006 to 2015, the average annual city capital expenditures were \$3 billion. During this period, maximum city expenditures were approximately \$4 billion in 2015, and a minimum of \$2 billion in 2006. Since 2006, capital expenditures have steadily increased. A majority of the capital expenditures are associated with funding water supply reliability management and water quality actions. Table 21 and Figure 19 show city capital expenditures between 2006 and 2015 by water sector.

Table 21 City Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$865,896	\$1,105,365	\$93	\$111,554	\$2,082,908
2007	\$0	\$1,079,959	\$1,325,150	\$11,819	\$128,342	\$2,545,270
2008	\$0	\$1,105,768	\$1,443,611	\$13,152	\$108,565	\$2,671,096
2009	\$0	\$1,211,441	\$1,350,332	\$6,716	\$100,317	\$2,668,806

Table 21 City Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2010	\$0	\$1,260,013	\$1,229,857	\$86	\$112,903	\$2,602,859
2011	\$0	\$1,635,853	\$1,468,057	\$4,554	\$107,860	\$3,216,324
2012	\$0	\$1,797,180	\$1,482,785	\$3,981	\$104,206	\$3,388,152
2013	\$0	\$1,889,848	\$1,616,806	\$3,722	\$125,781	\$3,636,157
2014	\$0	\$2,000,184	\$1,698,790	\$4,120	\$121,907	\$3,825,001
2015	\$0	\$2,118,053	\$1,684,283	\$3,961	\$119,264	\$3,925,561
Average	\$0	\$1,496,419	\$1,440,503	\$5,220	\$114,070	\$3,056,213

Source: SCO, 2016a

**Figure 19** City Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: SCO, 2016a

Notable observations of city capital expenditures during this period include:

- There are no expenditures for capital flood management actions as these were mostly likely included within streets and roadway construction costs or in new areas that were constructed by private developers.
- City capital expenditures for water supply reliability management actions increased steadily during the period, averaging approximately \$1.5 billion per year.
- Water quality expenditures remained steady during the period, with an average of \$1.4 billion per year. The expenditures increased slightly from approximately \$1.1 billion in 2006 to approximately \$1.7 billion in 2014, with dips in 2009 and 2010, coinciding with the 2008 recession.
- Funding for ecosystem management actions fluctuated significantly during the period but accounted for less than 0.2 percent of total city capital expenditures. Expenditures increased from \$93,000 in 2006 to \$13 million in 2008 most likely due to bond funding availability, but declined by half in 2009. Expenditures further declined in 2010 to approximately \$86,000. By 2012, ecosystem management expenditures bounced back to approximately \$4.6 million, and remained at approximately \$3.9 million, on average, over the remaining 4 years.
- Capital expenditures for management actions that benefit people and water remained steady between 2006 through 2015, averaging \$114 million per year.

City Ongoing Expenditures

City ongoing expenditures include expenditures for both administration costs and O&M, with an average of \$11 billion per year. Maximum city expenditures for ongoing actions was approximately \$13 billion in 2015, and the minimum city ongoing expenditures was approximately \$8 billion in 2006. Except for a slight decrease in 2010, ongoing expenditures steadily increased from 2006 to 2015. Table 22 and Figure 20 show the total ongoing expenditures between 2006 and 2015, separated by water sector.

Table 22 City Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$179,440	\$3,024,983	\$4,468,124	\$2,920	\$445,580	\$8,121,047
2007	\$221,877	\$3,740,996	\$5,310,991	\$34,755	\$545,599	\$9,854,218
2008	\$186,353	\$3,729,334	\$5,708,884	\$37,642	\$589,964	\$10,252,177
2009	\$190,237	\$4,075,034	\$5,808,893	\$32,468	\$584,125	\$10,690,757
2010	\$229,906	\$3,819,961	\$5,253,047	\$3,303	\$534,869	\$9,841,086
2011	\$221,487	\$4,348,975	\$5,795,906	\$34,536	\$525,572	\$10,926,476
2012	\$225,299	\$4,650,934	\$6,026,671	\$30,313	\$505,300	\$11,438,517
2013	\$247,844	\$4,828,652	\$6,478,996	\$29,788	\$532,223	\$12,117,503
2014	\$209,915	\$5,127,159	\$6,881,828	\$34,083	\$555,974	\$12,808,959
2015	\$219,056	\$5,436,720	\$6,759,540	\$27,438	\$499,735	\$12,942,489
Average	\$213,141	\$4,278,275	\$5,849,288	\$26,725	\$531,894	\$10,899,323

Source: SCO, 2016a

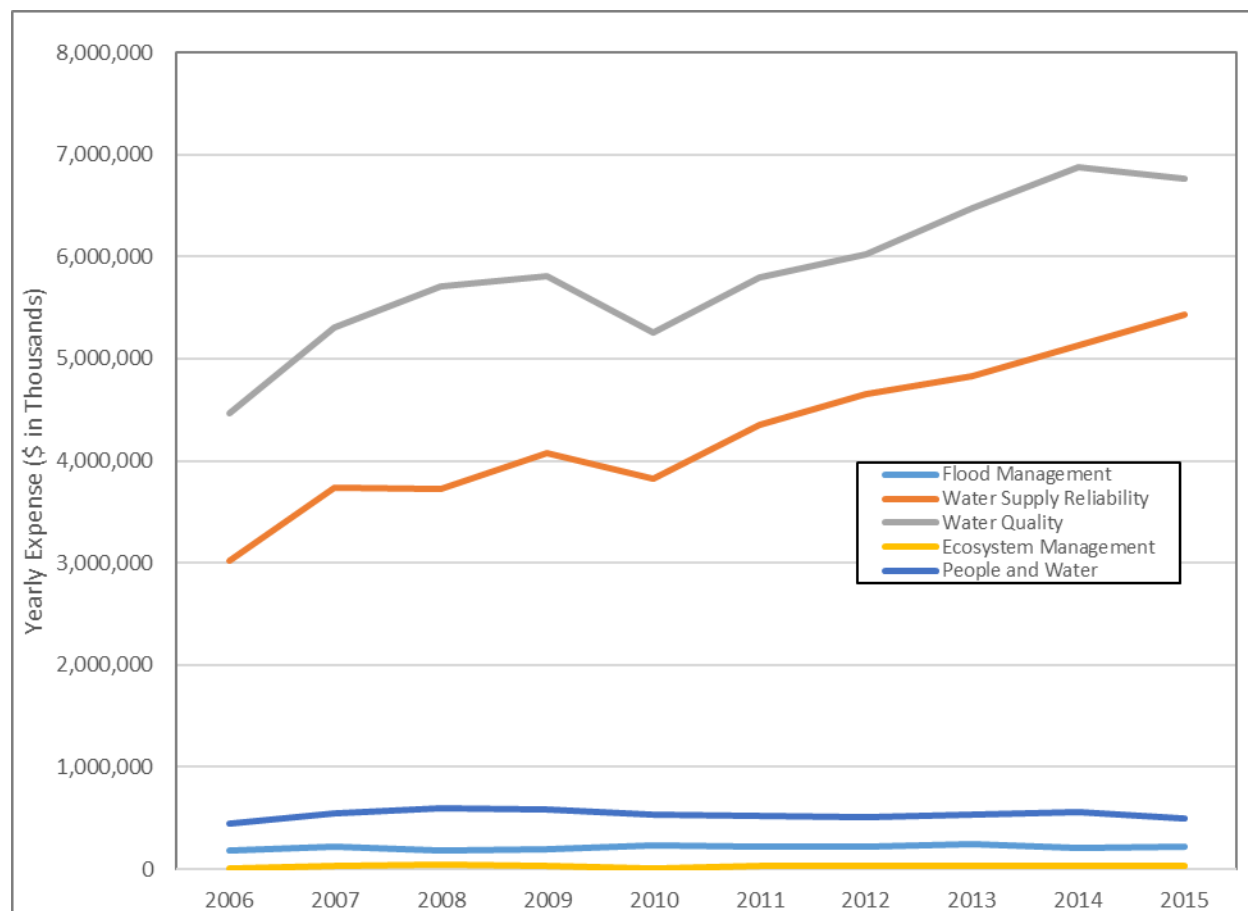


Figure 20 City Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: SCO, 2016a

Notable observations of city ongoing expenditures include:

- On average, approximately two percent of total ongoing expenditures supported ongoing flood management actions. City ongoing expenditures for flood management were more than \$213 million per year on average, and remained steady. During the period, maximum city ongoing expenditures were approximately \$248 million in 2013 and a minimum of \$179 million in 2006.
- Approximately 40 percent of city ongoing expenditures funded water supply reliability management actions, averaging more than \$4 billion per year. During this period, expenditures steadily increased from \$3 billion in 2006 to more than \$5 billion in 2015.
- Approximately 55 percent of all city ongoing expenditures funded water quality management actions, averaging approximately \$6 billion per year. Expenditures increased from approximately \$5 billion in 2006 to approximately \$7 billion in 2014, with slight decreases in 2010 and 2015.
- Less than one percent of city ongoing expenditures were related to ecosystem management, averaging approximately \$27 million per year. Ongoing expenditures associated with ecosystem management fluctuated during the period, increasing from approximately \$3 million in 2006 to approximately \$38 million in 2008 before declining through 2010 to approximately \$3 million.

Between 2011 and 2015, ongoing expenditures continued to fluctuate, from approximately \$35 million (in 2011) to more than \$27 million (in 2015).

- Ongoing expenditures for people and water management actions remained steady during the period, averaging approximately \$532 million per year, which was less than five percent of the total ongoing expenditures.

Special Districts

Over time, California has passed legislation to create special districts to perform needed functions. Approximately 85 percent of special districts in California perform a single function, including water supply, sewer services, fire protection, and pest abatement (California Special Districts Association, 2017). Funding related to water resources management at special districts targets the construction and ongoing operations of specific public services such as water, sanitation, and public facilities. Expenditures related to these public services are typically captured in enterprise accounts of water districts, waste disposal districts, and harbor and port districts. Additionally, some of these expenditures are also included in the non-enterprise accounts related to recreation and parks, flood control and water conservation, resource conservation, drainage and drainage maintenance, land reclamation and levee maintenance, and weed abatement activities. These public services can further be grouped into sectors whose broad mandate include flood management, water supply reliability, water quality, ecosystem management, and benefits for people and water.

Total Special District Expenditures

Data for California special district expenditures for water resources management from 2006 through 2015 were collected from the State Controller's Office (SCO, 2017c). Between 2006 and 2015, total special district expenditures averaged approximately \$13 billion per year, with an average of \$3 billion for capital and \$10 billion for ongoing expenditures. Ongoing expenditures accounted for more than 75 percent of the total expenditures. Table 23 shows capital, ongoing, and total special district expenditures between 2006 and 2015.

Overall, total expenditures have been trending upwards, with most of the increase associated with ongoing expenditures. Total expenditures steadily increased during the period from a minimum of approximately \$10 billion in 2006 to more than \$15 billion in 2015. Figure 21 shows the total capital and ongoing expenditures between 2006 and 2015.

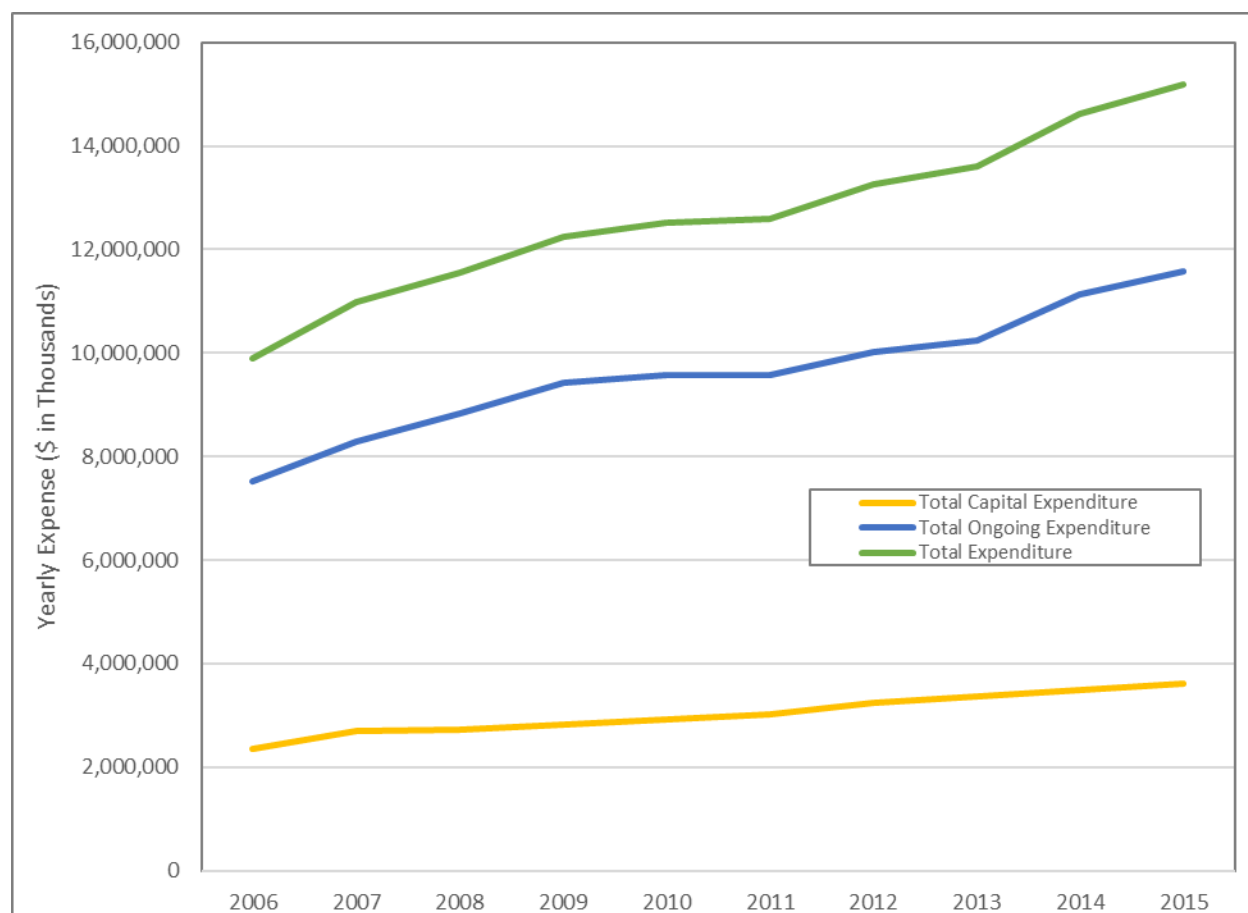
Table 23 Special District Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$2,357,380	\$7,530,906	\$9,888,286
2007	\$2,690,243	\$8,294,563	\$10,984,806
2008	\$2,717,940	\$8,836,048	\$11,553,988
2009	\$2,825,640	\$9,422,822	\$12,248,462
2010	\$2,932,216	\$9,580,656	\$12,512,872
2011	\$3,021,692	\$9,578,030	\$12,599,722
2012	\$3,232,138	\$10,029,032	\$13,261,170
2013	\$3,374,784	\$10,230,066	\$13,604,850

Table 23 Special District Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2014	\$3,493,459	\$11,123,040	\$14,616,499
2015	\$3,617,159	\$11,578,932	\$15,196,091
Average	\$3,026,265	\$9,620,409	\$12,646,675

Source: SCO, 2016c

**Figure 21 Special District Expenditures on Capital and Ongoing Actions in California, 2006 to 2015**

Source: SCO, 2016c

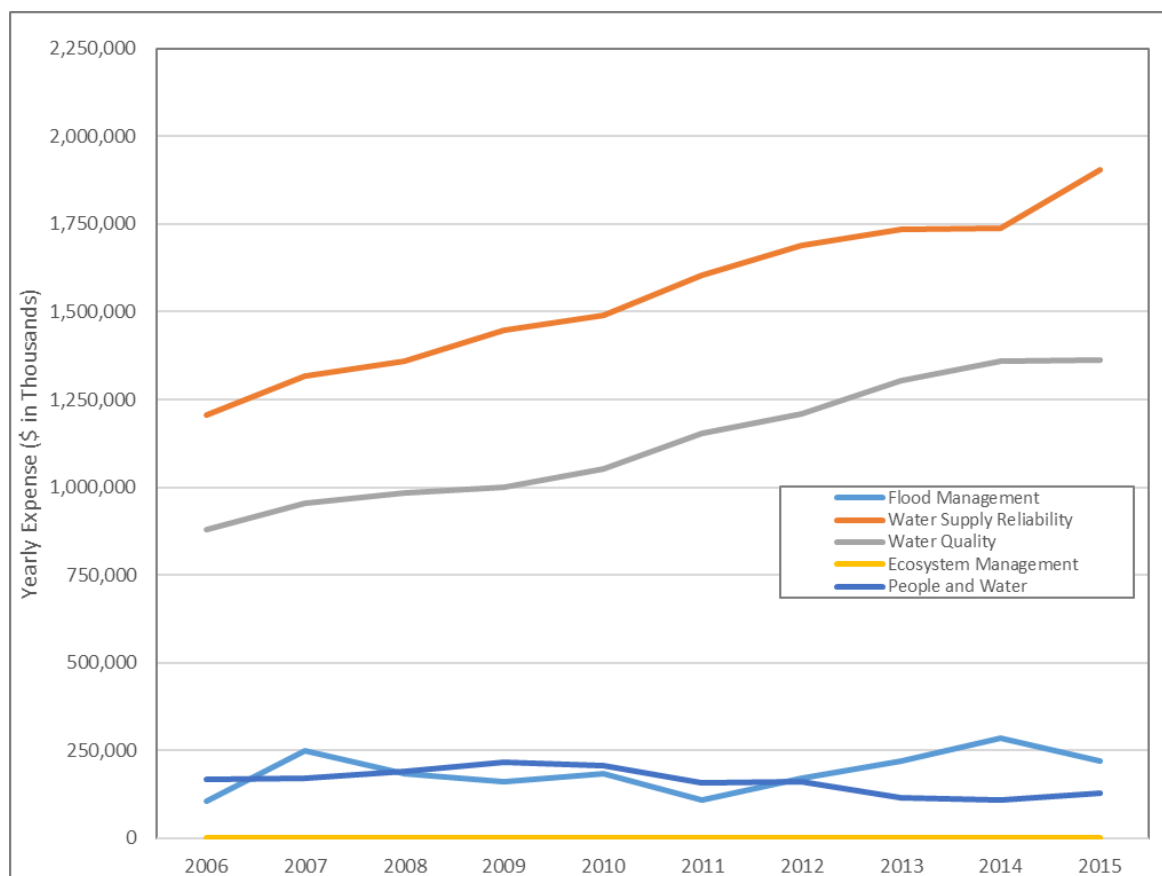
Special Districts Capital Expenditures

Special districts capital expenditures averaged approximately \$3 billion per year from 2006 to 2015. Since 2006, capital expenditures have steadily increased, from a minimum of more than \$2 billion in 2006 to a maximum of \$4 billion in 2015. A majority of the capital expenditures are associated with funding management actions for water supply reliability (more than 50 percent of the total capital expenditures) and water quality (more than 35 percent of the total capital expenditures). Table 24 and Figure 22 show special districts capital expenditures between 2006 and 2015 by water sector.

Table 24 Special District Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$105,045	\$1,206,380	\$878,708	\$0	\$167,248	\$2,357,381
2007	\$250,157	\$1,316,110	\$954,182	\$0	\$169,795	\$2,690,244
2008	\$184,374	\$1,360,661	\$983,142	\$0	\$189,763	\$2,717,940
2009	\$160,697	\$1,446,533	\$1,001,883	\$0	\$216,528	\$2,825,641
2010	\$183,765	\$1,488,645	\$1,052,226	\$0	\$207,580	\$2,932,216
2011	\$107,958	\$1,603,548	\$1,153,304	\$0	\$156,882	\$3,021,692
2012	\$171,489	\$1,689,271	\$1,210,371	\$0	\$161,008	\$3,232,139
2013	\$218,480	\$1,735,161	\$1,305,464	\$0	\$115,678	\$3,374,783
2014	\$286,738	\$1,739,412	\$1,358,628	\$0	\$108,681	\$3,493,459
2015	\$218,940	\$1,906,305	\$1,361,919	\$0	\$129,995	\$3,617,159
Average	\$188,764	\$1,549,203	\$1,125,983	\$0	\$162,316	\$3,026,265

Source: SCO, 2016c

**Figure 22 Special Districts Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015**

Source: SCO, 2016c

Notable observations in special districts capital expenditures include:

- Approximately six percent of special districts capital expenditures were for flood management actions, averaging approximately \$189 million per year. Flood management expenditures fluctuated in the period from \$105 million in 2006 to \$287 million in 2014.
- More than 50 percent of special districts capital expenditures were directed towards water supply reliability management actions, averaging approximately \$1.5 billion per year. Expenditures increased steadily in the period from a minimum of \$1.2 billion in 2006 to \$1.9 billion in 2015.
- Capital expenditures for water quality management actions steadily increased from 2006 to 2015, averaging \$1.1 billion per year. The expenditures increased from approximately \$879 million in 2006 to approximately \$1.4 billion in 2015.
- Special districts with a water-related nexus did not have capital expenditures in the ecosystem management water sector as these were out of the purview of the agencies or the agencies may not separate ecosystem related expenditures from other management actions for reporting purposes.
- Capital expenditures for people and water management actions fluctuated during the period, with an average of \$162 million per year. The expenditures increased from 2006 to 2009 before declining.

Special Districts Ongoing Expenditures

From 2006 to 2015, special districts ongoing expenditures averaged approximately \$10 billion. Since 2006, ongoing expenditures have steadily increased, from a minimum of \$7.5 billion in 2006 to a maximum of \$11.6 billion in 2015. Approximately 60 percent of annual ongoing expenditures were for O&M activities. A majority of the ongoing expenditures were directed towards water supply reliability (approximately 55 percent of the total ongoing expenditures) and water quality (approximately 30 percent of the total ongoing expenditures) management actions. Table 25 and Figure 23 show special districts ongoing expenditures between 2006 and 2015 by water sector.

Table 25 Special Districts Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$841,159	\$4,026,555	\$2,201,973	\$127	\$461,091	\$7,530,905
2007	\$907,883	\$4,414,185	\$2,448,086	\$17	\$524,391	\$8,294,562
2008	\$894,861	\$4,674,503	\$2,690,759	\$12,626	\$563,298	\$8,836,047
2009	\$966,282	\$4,905,148	\$2,873,573	\$96	\$677,723	\$9,422,822
2010	\$981,130	\$5,174,927	\$2,766,186	\$989	\$657,425	\$9,580,657
2011	\$926,856	\$5,137,571	\$2,841,181	\$1,261	\$671,162	\$9,578,031
2012	\$928,832	\$5,356,721	\$3,051,925	\$963	\$690,591	\$10,029,032
2013	\$884,494	\$5,622,778	\$3,016,145	\$52	\$706,598	\$10,230,067
2014	\$900,984	\$6,317,554	\$3,161,017	\$64	\$743,420	\$11,123,039
2015	\$963,730	\$6,567,114	\$3,283,436	\$160	\$764,492	\$11,578,932
Average	\$919,621	\$5,219,706	\$2,833,428	\$1,636	\$646,019	\$9,620,409

Source: SCO, 2016c

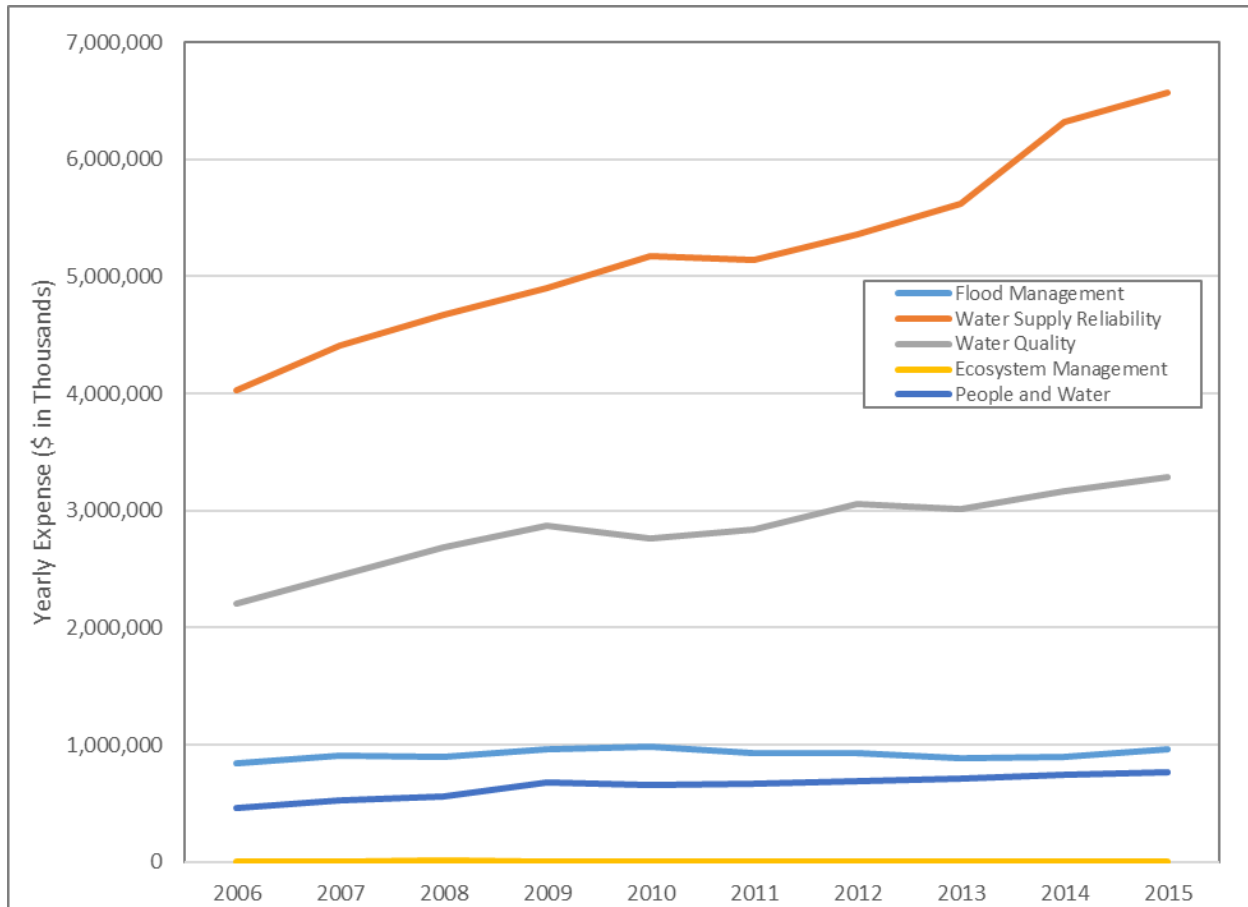


Figure 23 Special District Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: SCO, 2016c

Notable observations of special districts ongoing expenditures include:

- 10 percent of special districts ongoing expenditures were directed towards flood management actions, averaging approximately \$920 million per year. Flood management expenditures increased in the period from \$841 million in 2006 to \$964 million in 2015.
- Ongoing expenditures for water supply reliability management actions peaked at approximately \$6.6 billion in 2015 and accounted for approximately 55 percent (\$5.2 billion per year), on average, of all ongoing expenditures between 2006 and 2015.
- Ongoing expenditures for water quality management actions increased steadily from \$2.2 million in 2006 to approximately \$3.3 billion in 2015. Approximately 30 percent (\$2.8 billion per year) of ongoing management actions were in the water quality sector.
- Ongoing expenditures for ecosystem management accounted for less than one tenth of one percent, on average, of the total ongoing expenditures during the period. Additionally, expenditures for ecosystem management had minimal O&M expenditures as these actions either does not fall under the purview of the agency or the agencies may not separate ecosystem related expenditures from other management actions for reporting purposes.
- Ongoing expenditures for people and water management actions increased steadily during the

period, from more than \$460 million in 2006 to approximately \$764 million in 2015. Management actions in this sector account for seven percent of total ongoing expenditures.

Total Local Agency Expenditures

The total local agency expenditures are comprised of expenditures from cities, counties and special districts. Between 2006 and 2015, total local agency expenditures averaged approximately \$28 billion per year, with an average of more than \$6 billion for capital and approximately \$22 billion for ongoing expenditures. Ongoing expenditures accounted for approximately 80 percent of the total expenditures. Historical annual maximum expenditures occurred in 2015 (\$33,382 billion). Table 26 and Figure 24 show capital, ongoing, and total local expenditures between 2006 and 2015.

Table 26 Local Agency Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$4,458,591	\$16,632,961	\$21,091,552
2007	\$5,265,280	\$19,298,150	\$24,563,430
2008	\$5,415,557	\$20,276,388	\$25,691,945
2009	\$5,528,724	\$21,309,211	\$26,837,935
2010	\$5,572,814	\$20,616,310	\$26,189,124
2011	\$6,275,603	\$21,663,353	\$27,938,956
2012	\$6,666,151	\$22,624,744	\$29,290,895
2013	\$7,075,373	\$23,577,683	\$30,653,056
2014	\$7,386,402	\$25,203,986	\$32,590,388
2015	\$7,595,608	\$25,786,247	\$33,381,855
Average	\$6,124,010	\$21,698,903	\$27,822,914

Source: SCO, 2016a, 2016b, and 2016c

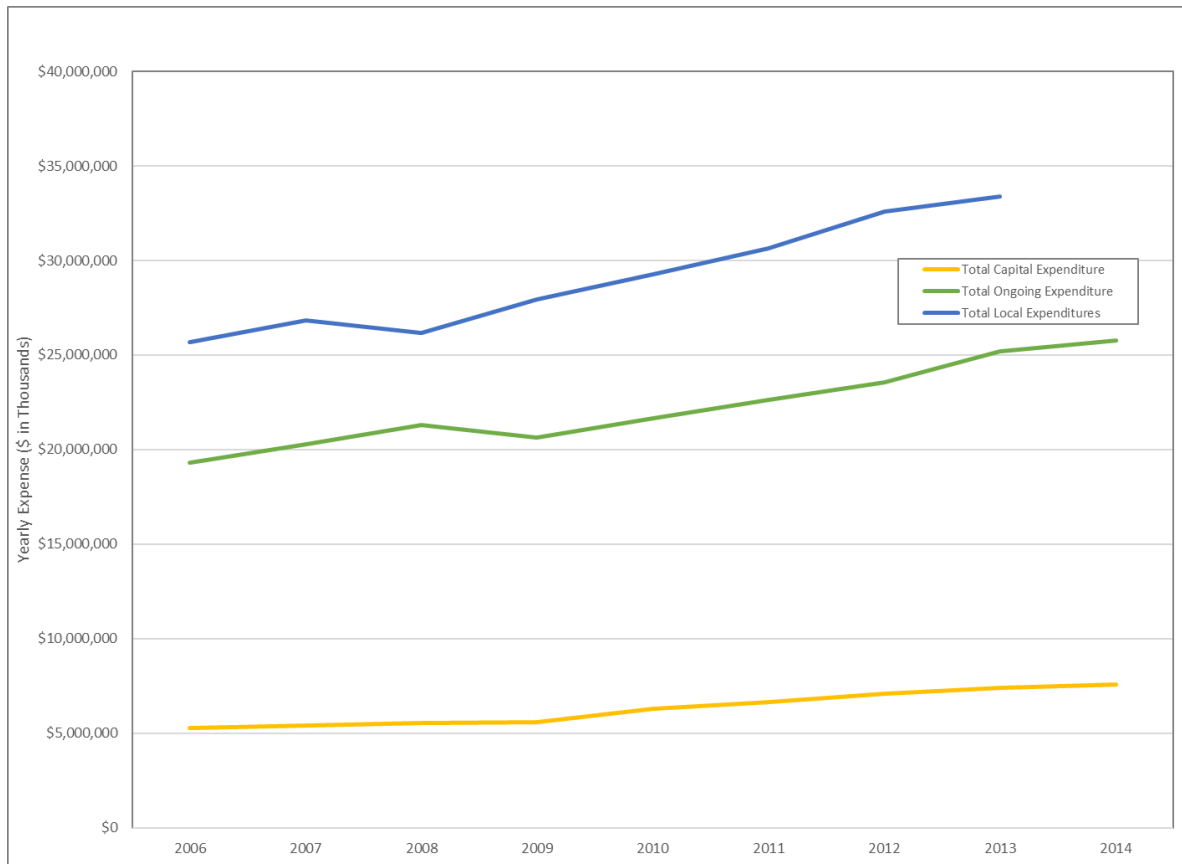


Figure 24 Local Agency Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: SCO, 2016a, 2016b, and 2016c

Total Local Agency Capital Expenditures

From 2006 to 2015, total local agency capital expenditures averaged more than \$6 billion per year. Since 2006, total local capital expenditures have steadily increased, from a minimum of \$4.5 billion in 2006 to a maximum of approximately \$7.6 billion in 2015. Fifty percent of the capital expenditures are associated with funding for water supply reliability management actions. Table 27 and Figure 25 show local capital expenditures between 2006 and 2015 by water sector.

Notable observations of total local capital expenditures include:

- Approximately three percent of total local capital expenditures were for flood management actions, averaging approximately \$189 million per year. Flood management expenditures fluctuated during the period from \$105 million in 2006 to approximately \$287 million in 2014. A majority of flood management expenditures were made by special districts.
- 50 percent of total local agency capital expenditures were for water supply reliability management actions, averaging more than \$3 billion per year. From 2006 to 2015, expenditures doubled from a \$2 billion in 2006 to \$4 billion in 2015.
- Expenditures for water quality management actions steadily increased during the period, with an average of \$2.6 billion per year. The expenditures increased from approximately \$2 billion in 2006 to approximately \$3 billion in 2015.

- Total local capital expenditures for ecosystem management actions fluctuated during the period, averaging \$5.2 million per year. Minimum expenditures were \$86,000 in 2010, and maximum expenditures were \$13 million in 2008. The fluctuation in funding is most likely a result of the cost share matches on State GO Bonds for local assistance efforts.
- Capital expenditures for people and water management actions remained stable during the period, with an average of more than \$280 million per year. Although expenditures remained relatively steady, expenditures did increase from 2006 to 2010 due to the availability of bond funding before declining.

Table 27 Local Agency Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$105,048	\$2,072,275	\$1,999,200	\$93	\$281,975	\$4,458,591
2007	\$250,249	\$2,396,069	\$2,305,065	\$11,819	\$302,079	\$5,265,281
2008	\$184,375	\$2,466,428	\$2,447,721	\$13,152	\$303,882	\$5,415,558
2009	\$160,697	\$2,657,974	\$2,381,888	\$6,716	\$321,450	\$5,528,725
2010	\$183,867	\$2,748,659	\$2,312,607	\$86	\$327,596	\$5,572,815
2011	\$107,959	\$3,239,401	\$2,656,383	\$4,554	\$267,306	\$6,275,603
2012	\$171,490	\$3,486,451	\$2,736,109	\$3,981	\$268,120	\$6,666,151
2013	\$220,151	\$3,625,009	\$2,979,916	\$3,722	\$246,575	\$7,075,373
2014	\$286,901	\$3,739,596	\$3,118,378	\$4,120	\$237,407	\$7,386,402
2015	\$219,517	\$4,024,358	\$3,093,317	\$3,961	\$254,455	\$7,595,608
Average	\$189,025	\$3,045,622	\$2,603,058	\$5,220	\$281,084	\$6,124,011

Source: SCO, 2016a, 2016b, and 2016c

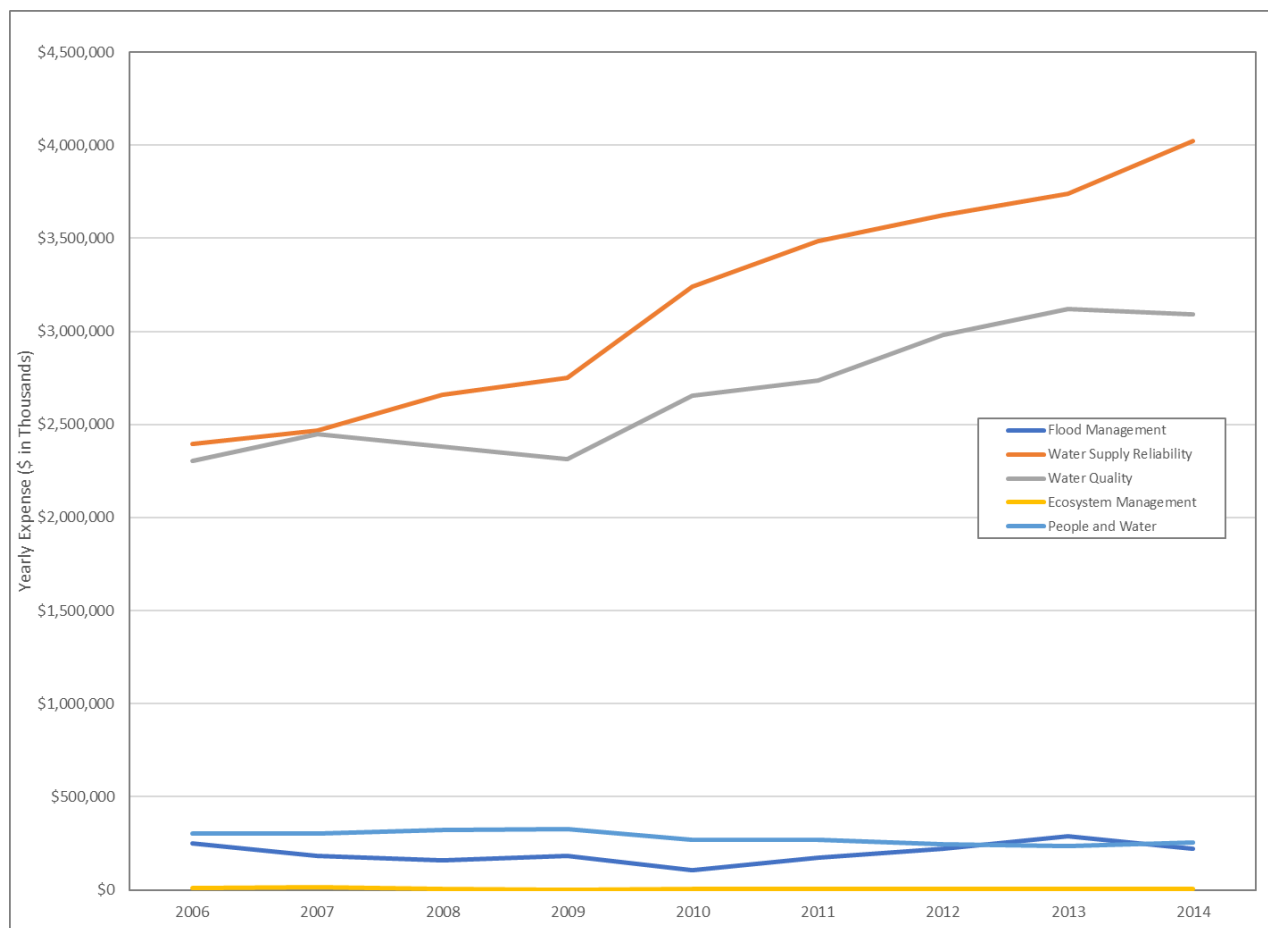


Figure 25 Local Agency Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: SCO, 2016a, 2016b, and 2016c

Total Local Agency Ongoing Expenditures

From 2006 to 2015, total local agency ongoing expenditures averaged \$22 billion per year. Except for a slight dip in 2010, ongoing expenditures have steadily increased since 2006, with a minimum of approximately \$17 billion in 2006 and maximum of approximately \$26 billion in 2015. A majority of the ongoing expenditures are associated with funding for water supply reliability (approximately 45 percent of total local agency ongoing expenditures) and water quality (more than 40 percent of total local agency ongoing expenditures) management actions. Table 28 and Figure 26 show total local agency ongoing expenditures between 2006 and 2015 by water sector.

Notable observations of total local agency ongoing expenditures include:

- Total local agency ongoing expenditures for flood management actions accounted for more than seven percent of total expenditures, averaging approximately \$1.6 billion per year.
- Approximately 45 percent of total local agency ongoing expenditures were for water supply reliability management actions. Ongoing expenditures for water supply reliability averaged approximately \$9.5 billion per year, and increased from \$7 billion in 2006 to at \$12 billion in

2015.

- Ongoing expenditures for water quality management actions have increased from \$6.8 billion in 2006 to \$10.4 billion in 2014 and accounted for more than 40 percent of total ongoing expenditures. From 2006 to 2015, ongoing expenditures for water quality management averaged approximately \$9 billion per year.
- Ongoing expenditures for ecosystem management accounted for less than one tenth of one percent, on average, of the total ongoing expenditures during the period.
- Ongoing expenditures for people and water management actions averaged approximately \$1.6 billion per year, approximately 10 percent of total local ongoing expenditures.

Table 28 Local Agency Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$1,435,714	\$7,051,862	\$6,831,442	\$3,048	\$1,310,894	\$16,632,960
2007	\$1,612,668	\$8,155,562	\$7,972,905	\$34,772	\$1,522,242	\$19,298,149
2008	\$1,582,843	\$8,404,632	\$8,597,891	\$50,268	\$1,640,755	\$20,276,389
2009	\$1,627,296	\$8,981,156	\$8,907,074	\$32,563	\$1,761,123	\$21,309,212
2010	\$1,677,569	\$8,995,817	\$8,243,020	\$4,292	\$1,695,612	\$20,616,310
2011	\$1,601,636	\$9,488,014	\$8,879,401	\$35,797	\$1,658,506	\$21,663,354
2012	\$1,589,128	\$10,009,014	\$9,348,191	\$31,277	\$1,647,133	\$22,624,743
2013	\$1,554,022	\$10,452,618	\$9,821,048	\$29,840	\$1,720,155	\$23,577,683
2014	\$1,526,616	\$11,445,550	\$10,392,538	\$34,147	\$1,805,135	\$25,203,986
2015	\$1,620,972	\$12,004,677	\$10,336,635	\$27,598	\$1,796,365	\$25,786,247
Average	\$1,582,846	\$9,498,890	\$8,933,015	\$28,360	\$1,655,792	\$21,698,903

Source: SCO, 2016a, 2016b, and 2016c

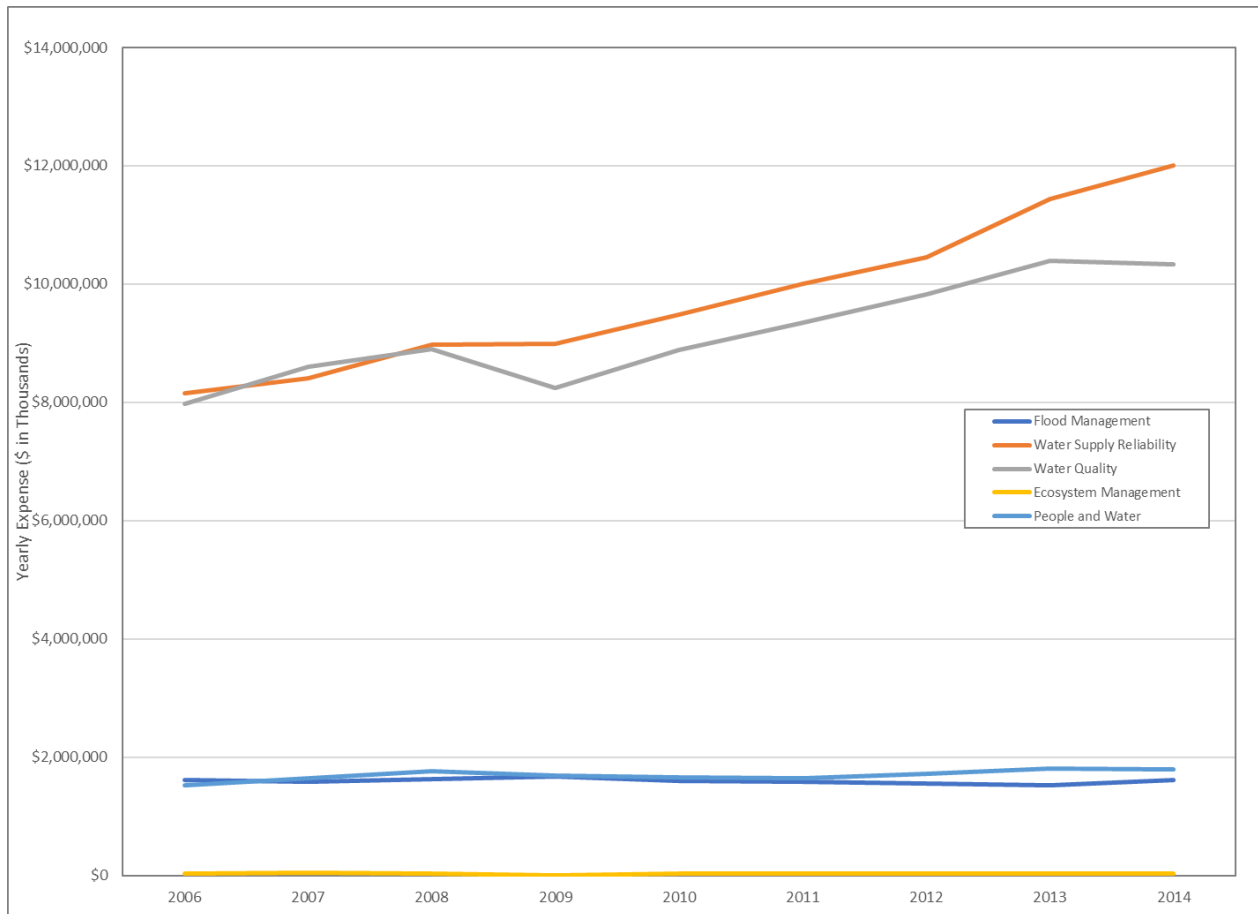


Figure 26 Local Agency Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: SCO, 2016a, 2016b, and 2016c

Historical Federal Agency Expenditures

Historical expenditure data was collected from Federal agencies that have responsibilities for water resource management including:

- Federal Emergency Management Agency
- National Oceanic and Atmospheric Administration
- Natural Resource Conservation Service
- United States Army Corps of Engineers
- United States Bureau of Land Management
- United States Bureau of Reclamation
- United States Department of Agriculture
- United States National Park Service

The data was collected from agency budgets and California State auditor reports.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is the disaster response agency of the Federal government. As such, FEMA provides local and state governments with funding for emergency preparedness programs, as well as emergency response funding following an emergency. These funds are used to enhance the capacity of local and State emergency responders to prevent, respond to, and recover from a natural or human-made emergencies. FEMA also has disaster assistance and grants available for emergency operation centers.

FEMA administers 17 technical or financial assistance programs that contribute funding towards water resources management. The programs predominately contribute towards pre- and post-disaster assistance. Example programs include The Disaster Grant Program (for Presidentially Declared Disasters) and the Hazard Mitigation Grant Program.

FEMA grant programs typically have a Federal cost share of approximately 75 percent of the total action cost. FEMA grants make cost-share adjustments for small, impoverished communities. FEMA classifies these communities as those that have fewer than 3,000 people with a per capita income less than 80 percent of the national per capita income and an unemployment rate at least one percent greater than the national average. This classification by FEMA raises the Federal cost-share from grants to 90 percent of the total cost. If the grant program is being used for a severe repetitive loss property, the FEMA cost share increases to 100 percent.

FEMA data was collected from the California State Auditor. Table 29 shows the FEMA programs, descriptions, and year the program was established (where available).

Table 29 FEMA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Community Assistance Program-State Support Services Element (CAP-SSSE)	The Community Assistance Program –State Support Services Element (CAP-SSSE) derives its authority from the National Flood Insurance Act of 1968, as amended, the Flood Disaster Protection Act of 1973 and from 44 CFR Parts 59 and 60. This program provides funding to states to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities. In this way, CAP-SSSE helps to ensure that the flood loss reduction goals of the NFIP are met, works to build state and community floodplain management expertise and capability, and leverages state knowledge and expertise in working with local communities (FEMA, 2017a).	1968
State Disaster Preparedness Grants	The Federal Emergency Management Agency provides state and local governments with preparedness program funding in the form of Non-Disaster Grants to enhance the capacity of state and local emergency responders to prevent, respond to, and recover from a weapons of mass destruction terrorism incident involving chemical, biological, radiological, nuclear, and explosive devices and cyber-attacks (FEMA, 2018a).	
Flood Mitigation Assistance	The Flood Mitigation Assistance (FMA) program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended with the goal of reducing or eliminating claims under the NFIP. FMA provides funding to States, Territories, federally-recognized tribes, and local communities for projects and planning that reduces or eliminates	1968

Table 29 FEMA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	<p>long-term risk of flood damage to structures insured under the NFIP. FMA funding is also available for management costs. Funding is appropriated by Congress annually.</p> <p>FEMA requires state, tribal, and local governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for Hazard Mitigation Assistance projects (FEMA, 2017b).</p>	
Hazard Mitigation Grant	<p>The purpose of the Hazard Mitigation Grant Program (HMGP) is to help communities implement hazard mitigation measures following a major Presidential disaster declaration. Hazard mitigation is any action taken to reduce or eliminate long term risk to people and property from natural hazards. Mitigation planning is a key process used to break the cycle of disaster damage, reconstruction, and repeated damage. The HMPG is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.</p> <p>State, tribal, and local governments engage in hazard mitigation planning to identify risks and vulnerabilities associated with natural disasters, and develop long-term strategies for protecting people and property from future hazard events. FEMA requires state, tribal, and local governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for HMA mitigation projects. For more information on mitigation plan requirement.</p> <p>To help State, tribal, and local governments develop and update mitigation plans, HMA funds mitigation planning grants. Consistent with requirements in 44 CFR Parts 201 and 206, a mitigation planning subaward must result in a mitigation plan adopted by the jurisdiction(s) and approved by FEMA, or it must result in a mitigation planning-related activity (eligible under HMGP only) approved by FEMA (FEMA, 2017c).</p>	1974
Emergency Management Performance Grants	The Emergency Management Performance Grant Program plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient Nation (FEMA, 2017d).	
Pre-Disaster Mitigation	The Pre-Disaster Mitigation Program (PDM), authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, is designed to assist States, U.S. Territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. This program awards planning and project grants and provides opportunities for raising public awareness about reducing future losses before disaster strikes. Mitigation planning is a key process used to break the cycle of disaster damage, reconstruction, and repeated damage. PDM grants are funded annually by Congressional appropriations and are awarded on a nationally competitive basis (FEMA, 2017e).	
State and Local All Hazards Emergency Operations	State and Local All Hazards Emergency Operations Planning provides grants to supplement and assist State and local efforts to prepare to respond to emergencies or disasters including any that may be caused by terrorist attacks using conventional means or Weapons of Mass Destruction (WMD). Such preparedness requires an extraordinary level of	

Table 29 FEMA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Planning	inter-service and inter-jurisdictional planning and coordination. The program provides grants to the States to encourage the development or updating of comprehensive, all-hazard emergency management plans by the States and by local governments. The requisite planning base supports and promotes efforts to establish lasting working relationships and facilitates the development of a common incident command system, general availability of interoperable communications, and effective mutual aid. In partnership with the Federal Government, strong emergency management and emergency services organizations at the State and local levels ensure the continuance of a comprehensive national emergency management system for disasters or emergencies resulting from natural disasters or accidental or man-made events (Federal Grant Wire, 2017a; FEMA, 1996).	
Emergency Operations Centers	The Emergency Operations Center Grant Program is intended to improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, and interoperable Emergency Operations Centers with a focus on addressing identified deficiencies and needs (FEMA, 2015).	
Pre-Disaster Mitigation Competitive Grants	The PDM Program, authorized by Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, is designed to assist States, U.S. Territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. This program awards planning and project grants and provides opportunities for raising public awareness about reducing future losses before disaster strikes. Mitigation planning is a key process used to break the cycle of disaster damage, reconstruction, and repeated damage. PDM grants are funded annually by Congressional appropriations and are awarded on a nationally competitive basis (FEMA, 2017e).	
Disaster Grants - Public Assistance (Presidentially Declared Disasters)	To assist State and local governments in responding to and recovering from the devastating effects of disasters by providing assistance for debris removal, emergency protective measures and the repair, restoration, reconstruction or replacement of public facilities or infrastructure damaged or destroyed. Assistance is provided only following a declaration by the President at the request of the State's Governor. Authorization of supplementary Federal assistance was passed in 1950 through the adoption of the Federal Disaster Relief Act (FEMA, 2017e, Federal Grant Wire, 2017b).	1950
Map Modernization Management Support	Flood Map Modernization, a multiyear Presidential initiative funded by Congress from fiscal year (FY) 2003 to FY 2008, improved and updated the nation's flood maps and provided 92 percent of the nation's population with digital Flood Insurance Rate Maps (FEMA, 2017f)	2003
Boating Safety Financial Assistance	The purpose of the National Recreational Boating Safety Program is to reduce the number of accidents, injuries, and deaths on America's waterways and provide a safe enjoyable experience for the boating public. The financial assistance is provided to encourage greater State participation and uniformity in boating safety, particularly to permit the States to assume the greater share of boating safety education, assistance, and enforcement activities, and to assist the States in developing, carrying out and financing their recreational boating safety	

Table 29 FEMA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	programs. The program also encourages greater non-profit organizations participation and uniformity in boating safety requirements (Department of Homeland Security, 2017).	
Cooperating Technical Partners	The Cooperating Technical Partners (CTP) Program was created in 1999 to help FEMA stretch limited mapping dollars and increase local involvement in the creation for the flood insurance rate maps (FIRMs) and digital flood insurance rate maps (DFIRMs). Partners such as communities, State or regional agencies, universities or Tribal nations must have the interest and capability to become active partners in the FEMA flood hazard mapping program to participate and receive funding (FEMA, 2014).	1999
National Dam Safety Program	The National Dam Safety Program is a partnership of the States, Federal agencies, and other stakeholders that encourages and promotes the establishment and maintenance of effective Federal and state dam safety programs to reduce the risks to human life, property, and the environment from dam related hazards (FEMA, 2017g).	
Cooperating Technical Partners (Pass-Through from California Natural Resources Agency)	The Cooperating Technical Partners (CTP) Program was created in 1999 to help FEMA stretch limited mapping dollars and increase local involvement in the creation for the FIRMs and DFIRMs. Partners such as communities, State or regional agencies, universities or Tribal nations must have the interest and capability to become active partners in the FEMA flood hazard mapping program to participate and receive funding (FEMA, 2014a).	
Pre-Disaster Mitigation Disaster Resistant Universities	The Pre-Disaster Mitigation (PDM) program assists States and communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to population, buildings and infrastructure, while also reducing reliance on funding from actual disaster declarations. PDM funds for Disaster Resistant University (DRU) are grants to State, local and Tribal governments for pre-disaster mitigation activities that benefit universities (Federal Grant Wire, 2017c).	
Severe Loss Repetitive Program	The primary objective of the Severe Repetitive Loss (SRL) program is to eliminate or reduce the damage to residential property and the disruption to life caused by repeated flooding. The SRL Grant Program makes funding available for a variety of flood mitigation activities. Under this program, FEMA provides funds to state and local governments to make offers of assistance to NFIP-insured SRL residential property owners for mitigation projects that reduce future flood losses through: acquisition or relocation of at-risk structures and conversion of the property to open space; elevation of existing structures; or dry floodproofing of historic properties (FEMA, 2011).	

Historical Expenditures

FEMA water related expenditures predominately fund flood management actions, including emergency management (preparedness, response, and recovery). Between 2006 and 2015, total FEMA expenditures in California averaged more than \$217 million per year, with an average of approximately \$180 million (approximately 85 percent) for capital and more than \$37 million (more than 15 percent) for ongoing expenditures. Table 30 shows capital, ongoing, and total FEMA expenditures in California between 2006 and 2015.

Overall, total expenditures have fluctuated between 2006 and 2015, predominately due to large changes in capital funding. During the same period, ongoing expenditures rose in 2007 and 2008, and remained steady through 2015. Figure 27 shows the total FEMA capital and ongoing expenditures between 2006 and 2015.

Table 30 FEMA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$226,883	\$9,082	\$235,965
2007	\$240,482	\$25,003	\$265,485
2008	\$199,965	\$33,828	\$233,793
2009	\$215,292	\$40,455	\$255,747
2010	\$127,543	\$62,652	\$190,195
2011	\$361,901	\$37,500	\$399,401
2012	\$127,025	\$39,420	\$166,445
2013	\$114,797	\$34,272	\$149,069
2014	\$83,901	\$41,091	\$124,992
2015	\$98,632	\$47,995	\$146,627
Average	\$179,642	\$37,130	\$216,772

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

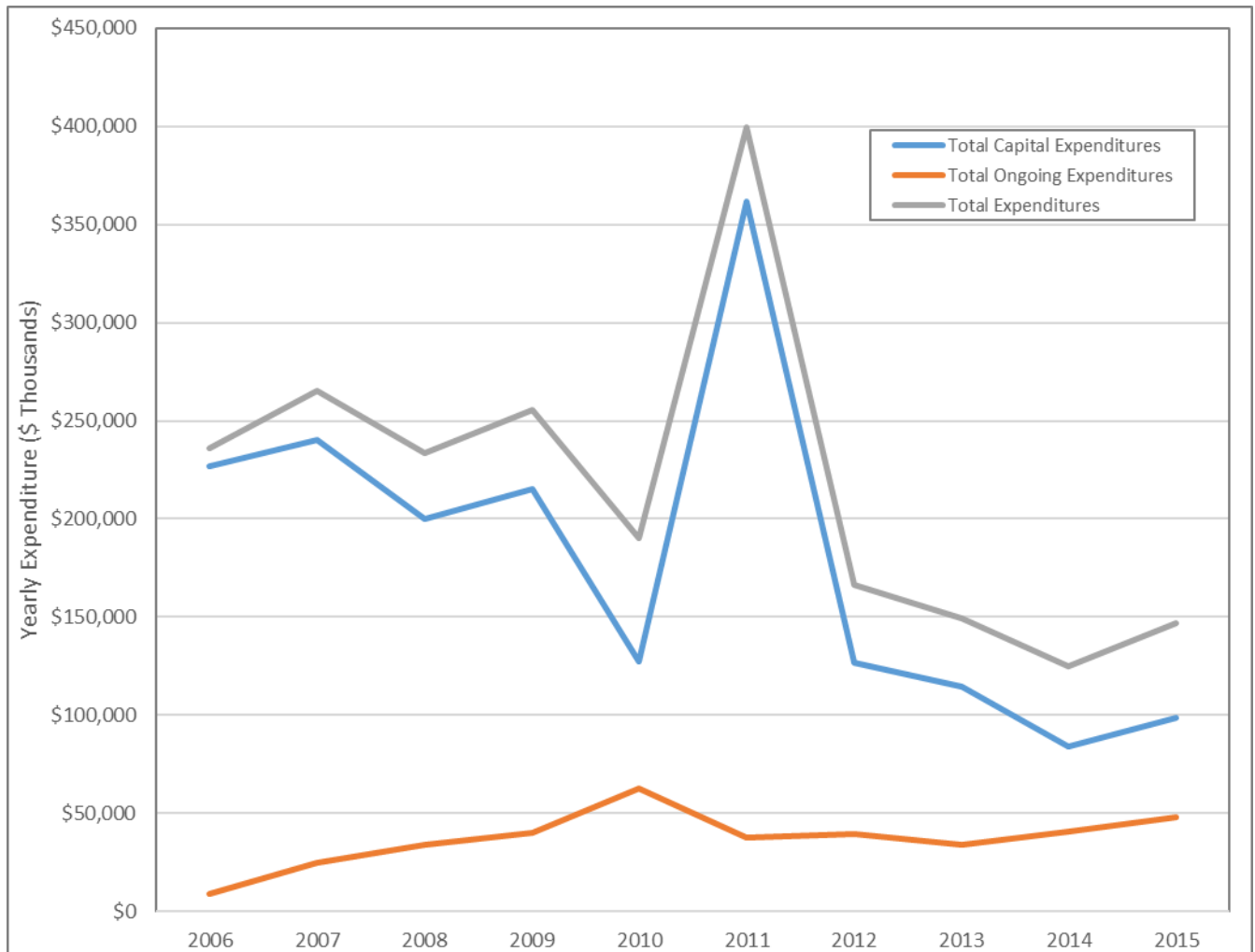


Figure 27 FEMA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

FEMA Capital Expenditures

FEMA water related capital expenditures predominately fund flood management actions, averaging approximately \$180 million per year. FEMA capital expenditures were highest in 2011, totaling more than \$362 million, with minimum expenditures occurring in 2014, at approximately \$84 million.

Table 31 shows capital expenditures by water sector.

The fluctuation in FEMA spending within California is predicated based on disaster declarations. Also, the American Recovery and Reinvestment Act (ARRA) most likely resulted in the spike in funding in 2010. Since 2007, capital expenditures have generally reduced, except for an increase in 2011. The rise in FEMA's capital expenditures in 2011 was from an increase in funding for the Presidentially Declared Disaster Grants funds account following major flooding in California. This grant funding was used to implement hazard mitigation measures, including retrofitting structures to protect them from flooding, developing local and State mitigation plans, and the construction of localized flood management projects

FEMA began placing additional emphasis on reducing repetitive losses, as required under the Bunning-

Bereuter-Blumenauer Flood Insurance Reform Act of 2004. This act amended Section 1323 of the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to structures insured under NFIP for properties that had one or more claim payment(s) for flood damages. Severe repetitive loss properties are defined by FEMA as NFIP-insured residential properties that have at least one of the following flood loss criteria since 1978, regardless of ownership:

- Four or more separate flood insurance claim payments each exceeding \$5,000 (including building and contents payments)
- Two or more separate claim payments (building payments only) where the total of the payments exceeds the current value of the property.

In either case, two of the claim payments must have occurred within 10 years of each other. Multiple losses at the same location within 10 days of each other are counted as one loss, with the payments amounts added together (NFIP, 2016). Reducing severe repetitive loss properties is funded through the Hazard Mitigation Grant Program. In California, funding for this program was used to elevate private properties located in Monterey and Sonoma Counties. Figure 28 shows the total capital expenditures between 2006 and 2015.

Table 31 FEMA Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$226,883	\$0	\$0	\$0	\$0	\$226,883
2007	\$240,482	\$0	\$0	\$0	\$0	\$240,482
2008	\$199,965	\$0	\$0	\$0	\$0	\$199,965
2009	\$215,292	\$0	\$0	\$0	\$0	\$215,292
2010	\$127,543	\$0	\$0	\$0	\$0	\$127,543
2011	\$361,901	\$0	\$0	\$0	\$0	\$361,901
2012	\$127,025	\$0	\$0	\$0	\$0	\$127,025
2013	\$114,797	\$0	\$0	\$0	\$0	\$114,797
2014	\$83,901	\$0	\$0	\$0	\$0	\$83,901
2015	\$98,632	\$0	\$0	\$0	\$0	\$98,632
Average	\$179,642	\$0	\$0	\$0	\$0	\$179,642

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

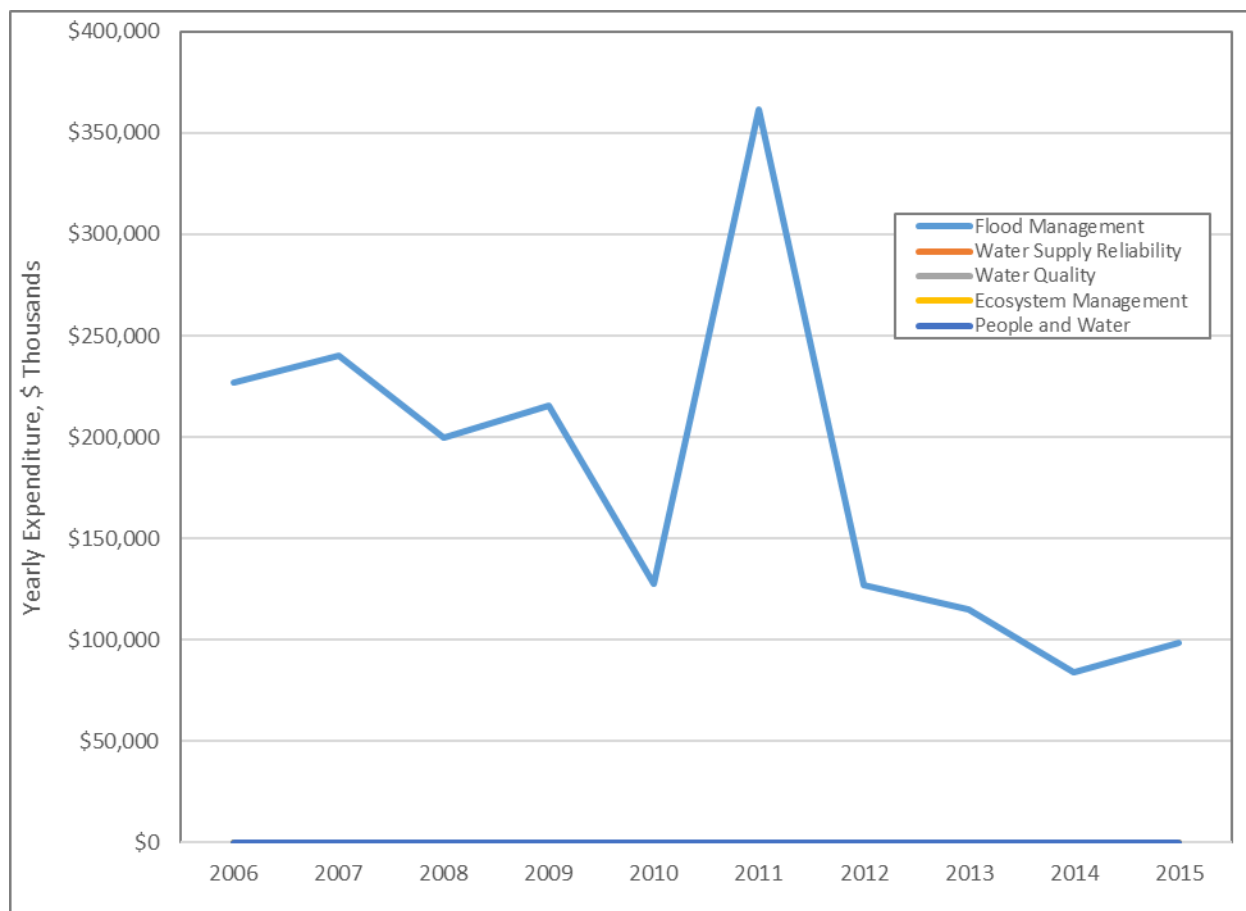


Figure 28 FEMA Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

FEMA Ongoing Expenditures

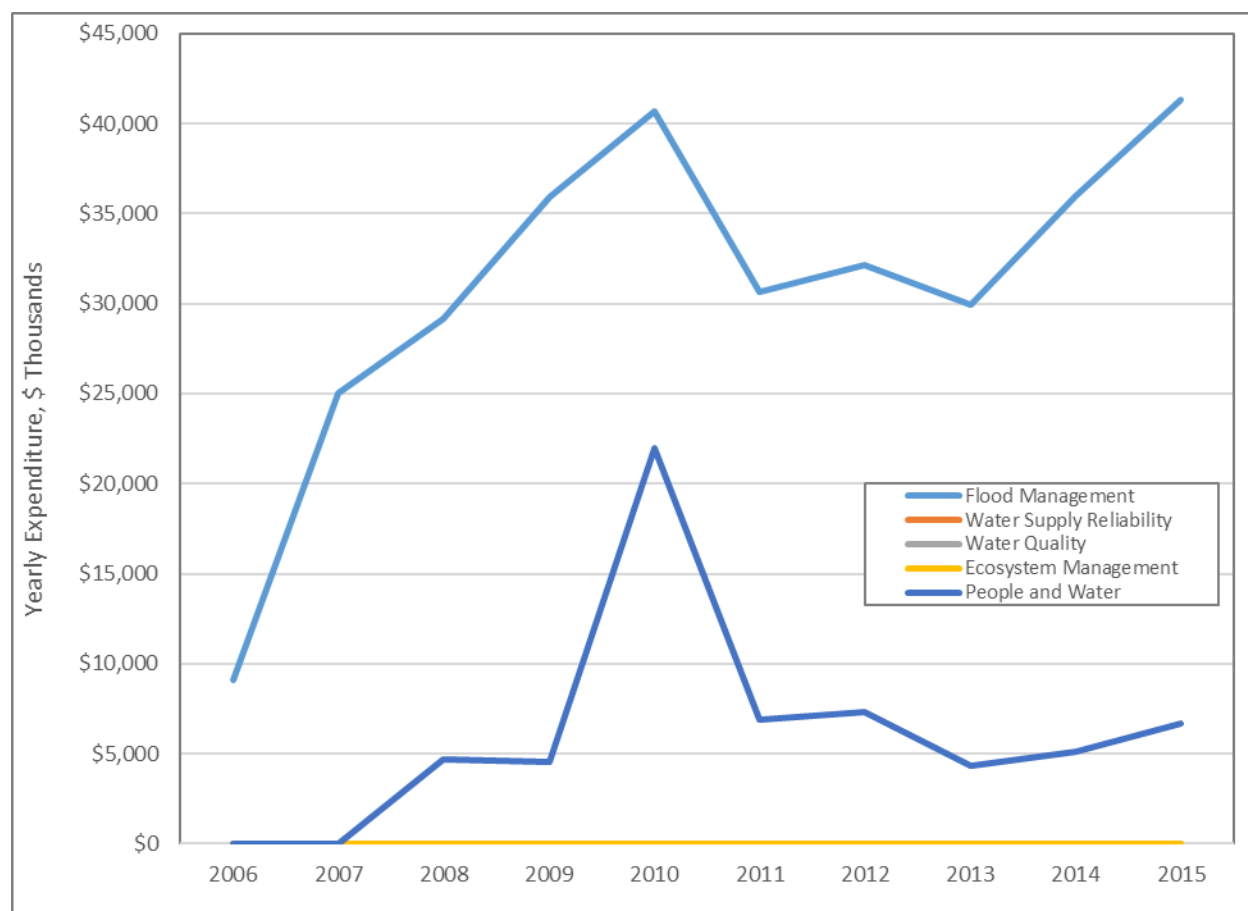
FEMA ongoing expenditures supported the flood management (83 percent of ongoing expenditures) and people and water (17 percent of all ongoing expenditures) sectors. Maximum ongoing expenditures were \$63 million in 2010, and minimum ongoing expenditures were \$9 million in 2006. Ongoing expenditures supported emergency management activities, such as hazard mitigation plans and the purchase of equipment for emergency response. Table 32 shows ongoing expenditures by water sector between 2006 and 2015.

Ongoing expenditures have risen following 2007, primarily through funding from the Emergency Management Performance Grant Program and the Pre-Disaster Mitigation Program. The Pre-Disaster Mitigation Program supports planning and project grants as well as provides opportunities for raising public awareness approximately reducing future losses before disaster strikes. Funding increased following Hurricane Katrina and Superstorm Sandy, due to an increased awareness of the need for emergency preparedness nationwide. This awareness resulted in increased funding for ongoing activities that promoted emergency preparedness for natural disasters. Funding for people and water was to support boating safety through the Boating Safety Financial Assistance Program. Figure 29 shows the total ongoing expenditures between 2006 and 2015.

Table 32 FEMA Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$9,082	\$0	\$0	\$0	\$0	\$9,082
2007	\$25,003	\$0	\$0	\$0	\$0	\$25,003
2008	\$29,145	\$0	\$0	\$0	\$4,684	\$33,829
2009	\$35,880	\$0	\$0	\$0	\$4,575	\$40,455
2010	\$40,673	\$0	\$0	\$0	\$21,980	\$62,653
2011	\$30,616	\$0	\$0	\$0	\$6,884	\$37,500
2012	\$32,125	\$0	\$0	\$0	\$7,295	\$39,420
2013	\$29,915	\$0	\$0	\$0	\$4,357	\$34,272
2014	\$36,002	\$0	\$0	\$0	\$5,089	\$41,091
2015	\$41,327	\$0	\$0	\$0	\$6,668	\$47,995
Average	\$30,977	\$0	\$0	\$0	\$6,153	\$37,130

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

**Figure 29 FEMA Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to**

2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015

National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA), a division of the Department of Commerce, is composed of three different agencies: NOAA Fisheries, NOAA National Geodetic Survey, and NOAA National Weather Service (NWS). NOAA has a scientific mission to promote research and education of “climate, weather, oceans, and coasts...to conserve and manage coastal and marine ecosystems and resources” (NOAA, 2017a). Through its three agencies, NOAA provides local and State governments with funding for scientific research, educational programs, and restoration projects.

NOAA administers more than 30 programs that contribute funding to water resources management. The programs predominately contribute towards scientific research for climate impacts, ecosystem management, and habitat conservation. Examples of these programs include: Climate and Atmospheric Research, Coastal Zone Management Estuarine Research Reserves, and the Habitat Conversation program.

NOAA programs, as shown in Table 33, require a cost share for local and State agencies to receive funding. Cost share requirements differ per program and can range from a 10 percent non-federal cost share up to a 50 percent non-federal cost share. NOAA data were collected from the Department of Commerce.

Table 33 NOAA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Anadromous Fish Conservation Act Program	The Anadromous Fish Conservation Act authorizes Federal grants to improve spawning areas, install fishways, construct fish protection devices and hatcheries, conduct research to improve management, and otherwise increase anadromous fish resources. Grant recipients are also able to take advantage of the provisions and funding of the program to leverage anadromous fish restoration plans and projects (NOAA, 2017b).	1997
Applied Meteorological Research	Through the Collaborative Science, Technology, and Applied Research (CSTAR) program, NOAA/NWS provides funding to the university community for highly collaborative applied research hydro-meteorological activities to create a cost-effective transition from basic and applied research to operations and services. Examples of awards were related to topics of regional and national importance such as developing an operational system for probabilistic quantitative precipitation forecasts in the U.S., improving the prediction of warm- and cool-season heavy precipitation events, improving forecasts of topographically-forced weather systems, and improving operational radar and satellite-based algorithms (Federal Grants Wire, 2017d).	2008
Automated Flood Warning Systems (AFWS)	NOAA NWS maintains partnerships with organizations who own, operate, and maintain automated gage networks. The AFWS program provides grant funding for the purchase of precipitation gages, computers, and communications hardware, with the agreement to operate and maintain the networks with non-NOAA funds (NOAA, 2017c).	2002
Center for Sponsored Coastal	NOAA's Coastal Ocean Program is a Federal-academic partnership designed to provide predictive capability for managing coastal	1998

Table 33 NOAA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Ocean Research: Coastal Ocean Program (CSCOR/COP)	ecosystems. It supports research on critical issues and translates its findings into accessible information for coastal managers, planners, lawmakers and the public. Grants may be used to fund research and interagency initiatives under specific CSCOR/COP programs related to NOAA's mission in harmful algal blooms, hypoxia and regional ecosystem research and to increase understanding of the Gulf of Mexico ecosystem and support its long-term sustainability, including its fish stocks, habitats, wildlife, and fishing industries (USDA, 2017a).	
Climate and Atmospheric Research Program	Funding from the Climate and Atmospheric Research Program supports research and development, science assessments, advisory services, and operational systems that establish a predictive capability for short and long-term climate and air quality fluctuations and trends that help to make better informed decisions (NOAA, 2017d).	1998
Coastal Services Center	NOAA's Coastal Services Center provides state and local coastal resource management organizations with the up-to-date technology, information, and management strategies. It awards grants to promote the development or expansion of regional coastal ocean observation systems. The Coastal Services Center works to support the environmental, social and economic wellbeing of the coast by linking people, information and technology, and is part of NOAA's National Ocean Service that provides integrated global leadership in the management of the oceans (NOAA, 2017e).	1994
Coastal Zone Management Administration Awards	NOAA Coastal Zone Management Administration Awards are used to implement and enhance a State's approved Coastal Zone Management program, including through funding administrative support costs (e.g., personnel salaries, travel and other related costs). In addition, awards could be used for management issues that are regional in scope, including interstate projects; demonstration projects which have high potential for improving coastal zone management; and emergency grants to State coastal zone management agencies to address unforeseen or disaster related circumstances (NOAA, 2002a).	1999
Coastal Zone Management Estuarine Research Reserves	The Coastal Zone Management Estuarine Research Reserves program awards grants to cover the costs of acquisition, development, and operation of the National Estuarine Research Reserves. Grants may be awarded to support administration expenses, as necessary, to monitor reserves, as well as to state entities for educational projects (NOAA, 2002b).	1995
Congressionally Identified Awards and Projects	This program provides Congressionally appropriated funds to facilitate education, research and development in the fields of marine and atmospheric science, and to provide a provision of assistance for the construction of suitable facilities for these activities, as specified by Congress (Catalog of Federal Domestic Assistance [CFDA], 2017a). ⁹	1999
Cooperative Science and Education Program	The Cooperative Science and Education program supports, through grants and cooperative agreements, enduring partnerships between the Federal government and institutions of research and higher education for cooperative science and education on marine issues, especially living marine resources and their habitat, that confront local, regional, and national resources managers. The program also awards grants and participates in cooperative agreements to develop innovative approaches and methods for marine and estuarine science and education (CFDA, 2017b).	1997

Table 33 NOAA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Coral Reef Conservation Program	The Coral Reef Conservation Program provides cooperative agreements and matching grants to support coral reef conservation programs and projects that preserve, sustain, and restore U.S. and international coral reef ecosystems (CFDA, 2017c).	2011
Educational Partnership Program	The Educational Partnership Program funds education and research programs aimed at increasing education, training and graduation rates in science, technology, engineering, and mathematics (commonly known as STEM) disciplines at Minority Serving Institutions (including Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Colleges and Universities, and Colleges with significant Asian American/Pacific Islander student populations, and Women's Colleges and Universities). The program provides cooperative agreements through a national competitive process (CFDA, 2017d).	2001
Environmental Sciences, Applications, Data, and Education	The Environmental Sciences, Applications, Data, and Education program provides grants towards atmospheric and oceanographic applied research, data assimilation and management, technology development, and education in environmental science. In addition, the program seeks to support long-term partnerships between the Federal government and universities and institutes (CFDA, 2017e).	1998
Financial Assistance for National Centers for Coastal Ocean Science	The Financial Assistance for National Centers for Coastal Ocean Science funds awards to determine the long-term consequences of human activities on the coastal and marine environments. In addition, it addresses these activities in terms of ecological, economic, and social impacts upon the human, physical, and biotic environments. Example projects include studies and the development of data sets (CFDA, 2017f).	1998
Fisheries Development and Utilization Research and Development Grants and Cooperative Agreements Program	Grants through the Fisheries Development and Utilization Research and Development Grants and Cooperative Agreements Program fund projects that benefit sustainable fisheries to support fishing industry jobs, safe and wholesome seafood, and recreational opportunities (Federal Grants Wire, 2017e).	1998
Geodetic Surveys and Services (Geodesy and Applications of the National Geodetic Reference System)	The Geodetic Surveys and Services program provides grants to increase the coverage of the National Spatial Reference System. This program support projects that will provide national, coordinated spatial reference system at various specified intervals which provide scale, orientation, coordinated positions, and elevations of specific points for use in surveying, boundary delineations and demarcation, mapping, planning, and development; to provide assistance to State, local, municipal, and regional agencies in the development and implementation of Multipurpose Land Information Systems (MPLIS)/Geographic Information Systems (GIS) pilot projects and spatial reference system development and/or enhancement, and Height Modernization (CFDA, 2017g).	1996
Habitat Conservation	The Habitat Conservation program provides grants and cooperative agreements for habitat conservation activities including coastal and marine habitat restoration and protection. Projects are funded to carry out public policy pertaining to protection and restoration of the Nation's wetlands and other coastal habitats (including Great Lakes habitats), pursuant to the Fish and Wildlife Coordination Act, Magnuson Fishery Conservation and Management Act as reauthorized in 2006, Endangered	1995

Table 33 NOAA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	Species Act, Estuary Restoration Act, Marine Mammal Protection Act, Marine Plastic Pollution Research and Control Act of 1987, Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), Coral Reef Conservation Act, Marine Debris Research, Prevention, and Reduction Act, and other legislation (CFDA, 2017h).	
Hydrologic Research	This program provides funds to maintain a cooperative university/Federal partnership to conduct joint research and development on pressing surface water hydrology issues common to National, regional, local operational offices, private consulting hydrologists, and academics (CFDA, 2017i).	2000
Integrated Ocean Observing System (IOOS)	This program supports projects aimed at the development and sustainability of a national and international integrated ocean observing system designed to collect, monitor, and disseminate marine environment data in an interoperable, reliable, timely and user-specified manner by leveraging Federal, regional and private- sector partnerships (CFDA, 2017j).	2010
Interjurisdictional Fisheries Act Of 1986	Grants awarded through the Interjurisdictional Fisheries Act of 1986 are used for the research and enforcement of interjurisdictional fishery resources, for the development of fishery management plans, and for the restoration of resources following a natural disaster (NOAA, 2002b).	1999
Marine Mammal Data Program	Funding under the Marine Mammal Data Program provides support to State agencies for the collection and analysis of information on marine mammals that occur in the State's waters and interact with State managed fisheries and other marine resources. Discretionary funds may be announced in the Federal Register under competitive programs to undertake research in subjects which are relevant to the protection and conservation of marine mammals (CFDA, 2017k).	1999
Marine Sanctuary Program	The Office of National Marine Sanctuaries serves as the trustee for a network of underwater parks encompassing more than 600,000 square miles of marine and Great Lakes waters. This program aims to provide educational outreach to the citizens of the U.S. on ocean awareness through numerous competitive and non-competitive grants to foundations, local public schools, scholarships, universities and many other entities (NOAA, 2017f).	2001
Meteorologic and Hydrologic Modernization Development	This program provides direct payments with unrestricted use to maintain a cooperative university and Federal partnerships to conduct meteorological training, education, professional development, and research and development on issues common to the hydrometeorological community (CFDA, 2017l).	2000
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Through the National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes, NOAA provides the research and technology development necessary to improve the agency's weather and climate services, solar-terrestrial forecasts, and marine services (CFDA, 2017m).	1996
NOAA Mission-Related Education Awards	The objectives of the NOAA Mission-Related Education Awards are to facilitate educational activities related to NOAA's mission (CFDA, 2017n).	2010
NOAA Programs for Disaster Relief	NOAA Programs for Disaster Relief Appropriations Act – Non-Construction and Construction grants fund projects that aim to protect, restore, and manage the use of coastal and ocean resources through an ecosystem	2013

Table 33 NOAA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Appropriations Act – Non-Construction and Construction	<p>approach to management as well as understand climate variability and change to enhance society's ability to plan and respond Serve society's needs for weather and water information (CFDA, 2017o).</p> <p>Examples of funded actions include (Federal Grants Wire, 2017f):</p> <ul style="list-style-type: none"> • Repaired and replaced ocean observing and coastal monitoring assets damaged by Hurricane Sandy in the Hudson River National Estuarine Research Reserve, • Projects to improve forecasts on storm intensity in the Northeast US, Program to develop and fund a relocatable Ocean System Observing System Simulation Experiments (OSSE) • Disaster relief projects in the Mid-Atlantic and Northwest, • IOCM Research in Support of Super Storm Disaster Relief, • Incorporation of geospatial and analytical tools into local planning efforts and the development of a statewide geospatial climate adaptation and resilience planning tool (NJADAPT) modeled after CalAdapt (http://cal-adapt.org) • Programs to improve global weather modeling, seasonal predictions of hurricanes, and Social Science for Risk Communication of Coastal Storm Hazards. 	
Ocean Exploration and Research	NOAA created the Office of Ocean Exploration and Research to combine the National Undersea Research Program and the Office of Ocean Exploration. Funding supports advance research in new and emerging scientific issues and transforming discoveries into useful knowledge and applications (NOAA, 2017g).	2007
Pacific Coast Salmon Recovery - Pacific Salmon Treaty Program	This is a cooperative program that assists the States in salmon restoration and in fulfilling responsibilities under the Pacific Salmon Treaty by providing administrative management. Support is provided to treaty Indian tribes for salmon recovery and to meet the needs of the Pacific Salmon Commission and U.S. international commitments under the treaty (NOAA, 2017h).	1999
Pacific Fisheries Data Program	This cooperative program provides support to State fishery agencies to enhance their data collection and analysis systems to respond to coast wide and insular area fisheries management needs. The program supports fisheries data collection and analysis projects that provide catch, effort, economic and biological data on federally managed species to the Fishery Management Councils as needed for continuing management of Pacific fisheries (Federal Grants Wire, 2017h).	1999
Sea Grant Support	The Sea Grant Support program supports marine resources research, education, and training at major university centers. Grant awards can be used for research and development, education and training, and advisory services (NOAA, 2002b).	1998
Special Oceanic and Atmospheric Projects	Special Oceanic and Atmospheric Projects explore the Earth's largely unknown oceans in all their dimensions for the purposes of discovery and the advancement of knowledge, using state of the art technologies in evolutionary and revolutionary ways within Oceanic and Atmospheric Research (OAR). Cooperative agreements and grants may be used for research and development, education and training, and advisory services. They may also be used for operational systems as they relate to specific programs (CFDA, 2017p).	1998
Unallied	Projects provide economic, sociological, public policy, and other	1998

Table 33 NOAA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Management Projects	information needed by Federal and state natural resource administrators for conserving and managing fishery resources and protected species and their environment in Federal, state, and U.S. territorial waters. Information derived from project studies may consist of econometric data, user profiles, sociological case studies, policy and systems analyses, and other knowledge, and is used in such decisions as resource allocations, total and zonal harvest determinations, and initial apportionment of harvesting rights under controlled access management regimes. Funds can be used by recipients to support a wide variety of management activities for high-priority marine and estuarine resources, especially for species and/or their habitat currently under or proposed for future Federal or interjurisdictional management (CFDA, 2017q).	
Unallied Science Program	The Unallied Science Program provides grants and cooperative agreements for biological, socio-economic, and physical science research on the stocks of fisheries resources and protected resources of the U.S. and their environment, and to develop innovative approaches and methods for marine and estuarine science. Funds can be used by recipients to support a wide variety of research on high-priority marine and estuarine resource issues, especially for resources and/or their habitat currently under, or proposed for future Federal or interjurisdictional management (NOAA, 2017i).	1997

Historical Expenditures

NOAA predominately funds ecosystem management activities, including habitat conservation and research efforts. Between 2006 and 2015, total expenditures in California averaged approximately \$58 million a year, with an average of approximately \$23 million (approximately 40 percent) for capital expenditures and \$35 million (more than 60 percent) for ongoing expenditures. Table 34 shows capital, ongoing, and total NOAA expenditures between 2006 and 2015.

NOAA water management expenditures have fluctuated greatly from 2006 to 2015, with dips in spending in 2007 and 2008, followed by a large increase in capital and ongoing expenditures in 2009. Increased expenditures were due to multiple funds accounts becoming active in 2009 due to funding from the ARRA. From 2009 through 2014, NOAA capital expenditures decreased while ongoing expenditures remained somewhat steady. Figure 30 shows the total capital and ongoing expenditures between 2006 and 2015.

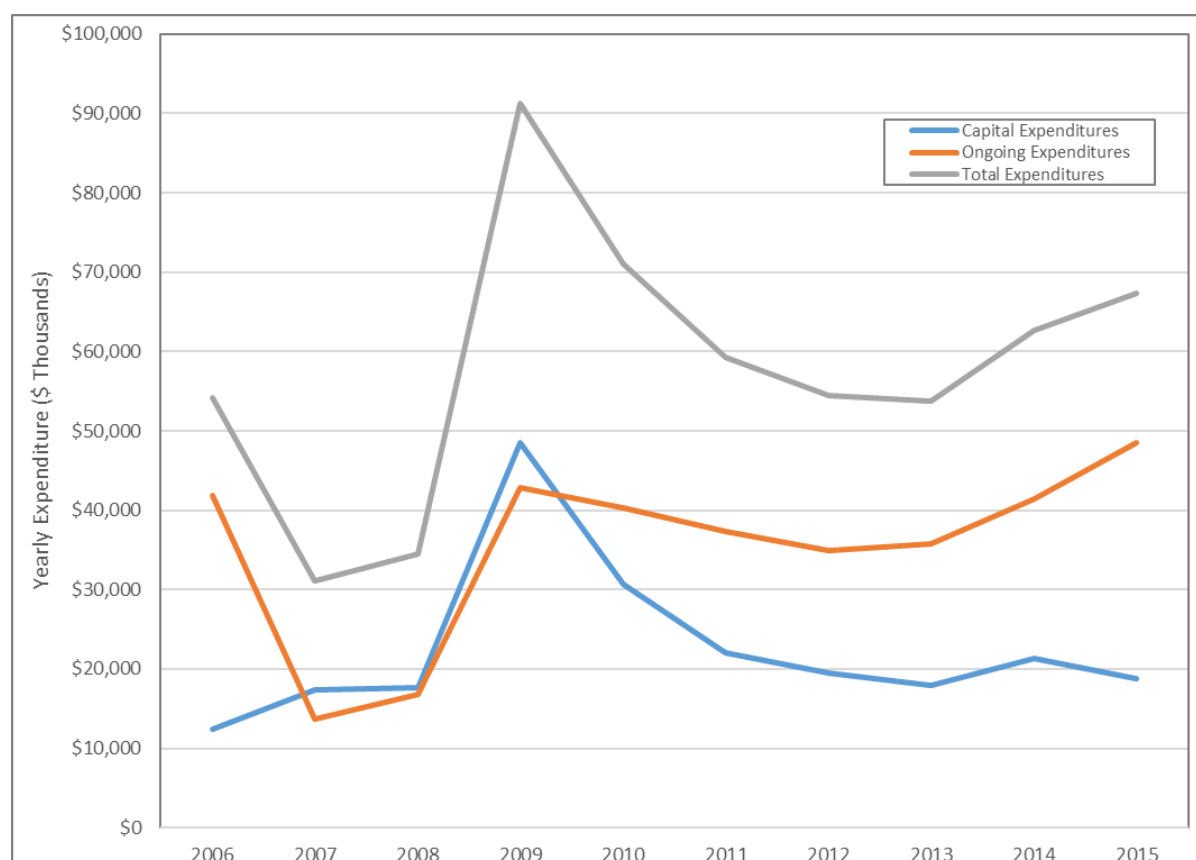
Table 34 NOAA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$12,425	\$41,818	\$54,243
2007	\$17,401	\$13,649	\$31,050
2008	\$17,679	\$16,812	\$34,491
2009	\$48,493	\$42,790	\$91,283
2010	\$30,732	\$40,280	\$71,012

Table 34 NOAA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2011	\$22,008	\$37,302	\$59,310
2012	\$19,477	\$34,949	\$54,426
2013	\$17,963	\$35,768	\$53,731
2014	\$21,300	\$41,399	\$62,699
2015	\$18,808	\$48,540	\$67,348
Average	\$22,629	\$35,331	\$57,959

Source: Library of Congress, 2017d.

**Figure 30 NOAA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015**

Source: Library of Congress, 2017d.

NOAA Capital Expenditures

NOAA predominantly funded capital management actions that supported ecosystem management (93 percent) and people and water (7 percent) during the period, with expenditures averaging approximately \$23 million per year. Maximum capital expenditures were approximately \$48 million in 2009 and lowest capital expenditures were approximately \$12 million in 2006. Figure 31 shows the total

capital expenditures between 2006 and 2015. Table 35 shows NOAA capital expenditures, by water sector.

Notable observations of NOAA capital expenditures include:

- NOAA capital flood management expenditures were only 0.25 percent of the total capital expenditures as flood management is not a primary responsibility of NOAA. Expenditures for flood management were for ecosystem projects that increased flood water retention and for projects that improved emergency response.
- There were no capital expenditures for the water supply reliability or water quality sectors as NOAA programs do not typically fund capital actions in these sectors.
- Capital expenditures for ecosystem management were more than 90 percent of the total capital expenditures, averaging \$21 million per year. Typically, the majority of ecosystem management capital expenditures provided funding for habitat restoration and fisheries protection programs. The large increase in funding between 2009 and 2010 came from a \$38 million increase in funding for recovery projects under the Habitat Conservation, Pacific Coast Salmon Recovery - Pacific Salmon Treaty Program, and Marine Sanctuary Program. For example, the California Department of Fish and Wildlife received approximately \$16 million for fisheries restoration.
- NOAA capital people and water expenditures were more than five percent of the total capital expenditures and averaged more than \$1.5 million a year. Maximum expenditures were in 2009 and funded construction of science education and visitor centers. From 2011 through 2015, NOAA did not have any capital expenditures that supported people and water.

Table 35 NOAA Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$8,055	\$4,371	\$12,426
2007	\$0	\$0	\$0	\$16,621	\$780	\$17,401
2008	\$0	\$0	\$0	\$16,339	\$1,340	\$17,679
2009	\$249	\$0	\$0	\$43,618	\$4,625	\$48,492
2010	\$275	\$0	\$0	\$25,857	\$4,600	\$30,732
2011	\$0	\$0	\$0	\$22,008	\$0	\$22,008
2012	\$0	\$0	\$0	\$19,477	\$0	\$19,477
2013	\$0	\$0	\$0	\$17,963	\$0	\$17,963
2014	\$50	\$0	\$0	\$21,250	\$0	\$21,300
2015	\$0	\$0	\$0	\$18,808	\$0	\$18,808
Average	\$57	\$0	\$0	\$21,000	\$1,572	\$22,629

Source: Library of Congress, 2017d.

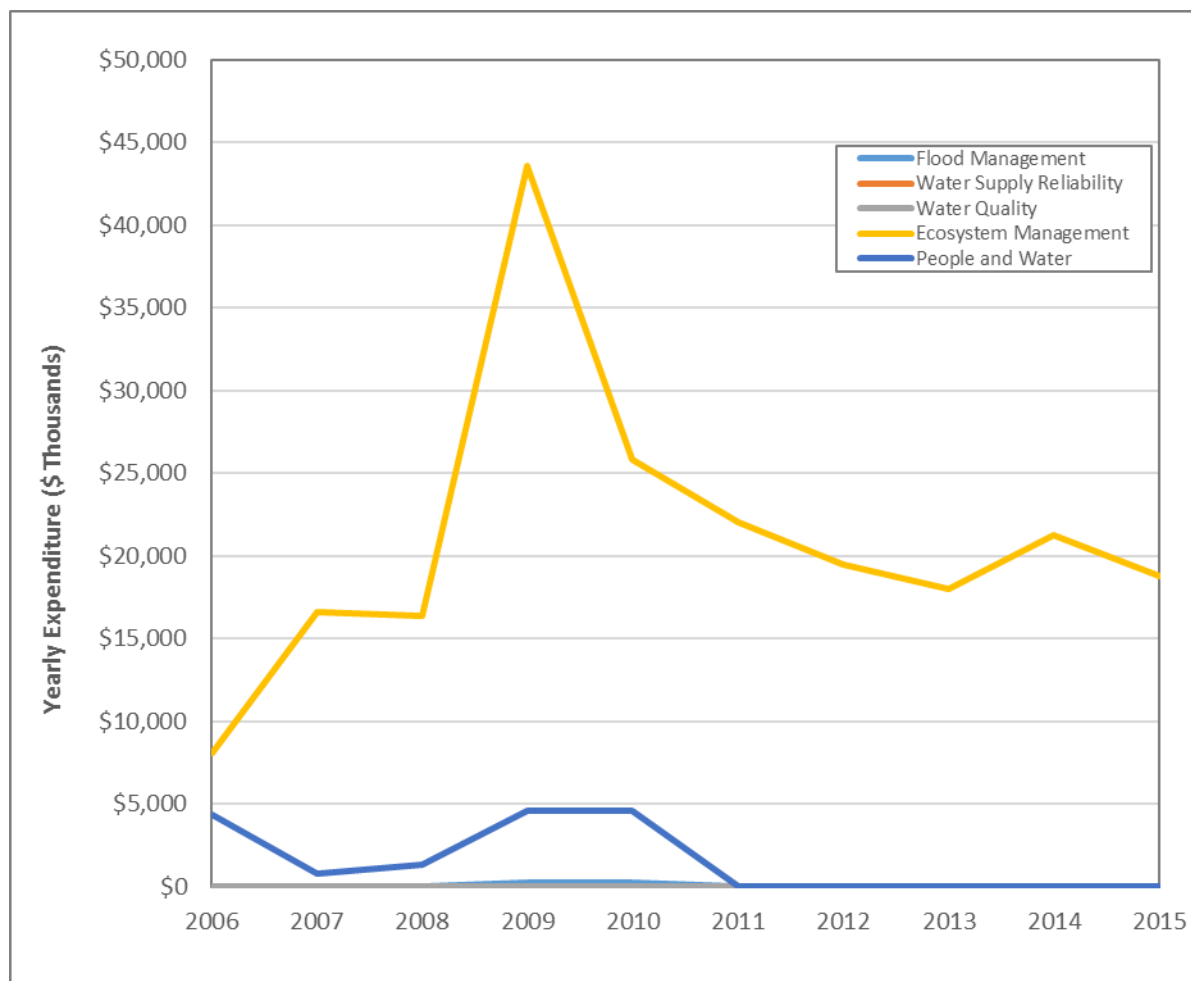


Figure 31 NOAA Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: Library of Congress, 2017d.

NOAA Ongoing Expenditures

NOAA ongoing expenditures averaged \$35 million per year and predominantly supported the ecosystem management water sector (more than 80 percent of all ongoing expenditures). Maximum ongoing expenditures were approximately \$49 million in 2015, and ongoing expenditures were as low as approximately \$14 million in 2007. Ongoing expenditures predominately supported scientific research and educational programs.

Overall, ongoing expenditures rose between 2007 and 2015, with a dip in 2010 through 2012. This decline was due to major programs that supported ecosystem management being unfunded, such as the Coastal Zone Management Administration Awards and the Coastal Zone Management Estuarine Research Reserves. Ongoing expenditures increased significantly in 2009 with increased funding for the Habitat Conservation Program and data management programs. The Habitat Conservation Program increases included approximately \$7.6 million for the Recovery Act South San Francisco Bay Salt Pond Restoration Project Phase 1 Actions and Invasive Spartina Project. In 2009, more than \$14 million of funding supported data management actions, including a \$2.4 million Global Drifter Program by The

Regents of the University of California (UC Regents) under the Cooperative Institutes Program.

In 2014 and 2015, new data management projects were funded by NOAA, totaling almost \$50 million. A majority of this funding went to higher education institutions, such as the University of California (UC) to fund programs such as the Fisheries Ecology-Supplement project and the California Sea Grant Omnibus Project.

Funding towards educational management actions accounted for the remainder of the increase in NOAA's ongoing expenditures. In 2006, education projects received a total of \$5.2 million. In 2009, additional education projects received funding from the Marine Sanctuary Program, Congressionally Identified Awards and Projects, Special Oceanic and Atmospheric Projects, Sea Grant Support, and Cooperative Institutes Programs. Table 36 and Figure 32 show NOAA ongoing expenditures, by water sector.

Table 36 NOAA Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$1,241	\$457	\$20	\$30,835	\$9,264	\$41,817
2007	\$721	\$357	\$0	\$11,381	\$1,191	\$13,650
2008	\$1,721	\$493	\$0	\$8,916	\$5,682	\$16,812
2009	\$2,993	\$416	\$136	\$30,100	\$9,145	\$42,790
2010	\$1,877	\$738	\$70	\$33,051	\$4,544	\$40,280
2011	\$1,289	\$846	\$68	\$34,495	\$604	\$37,302
2012	\$1,272	\$819	\$0	\$30,606	\$2,252	\$34,949
2013	\$1,520	\$1,852	\$0	\$30,249	\$2,147	\$35,768
2014	\$2,687	\$648	\$0	\$35,868	\$2,198	\$41,401
2015	\$1,437	\$848	\$0	\$42,634	\$3,621	\$48,540
Average	\$1,676	\$747	\$29	\$28,813	\$4,065	\$35,331

Source: Library of Congress, 2017d.

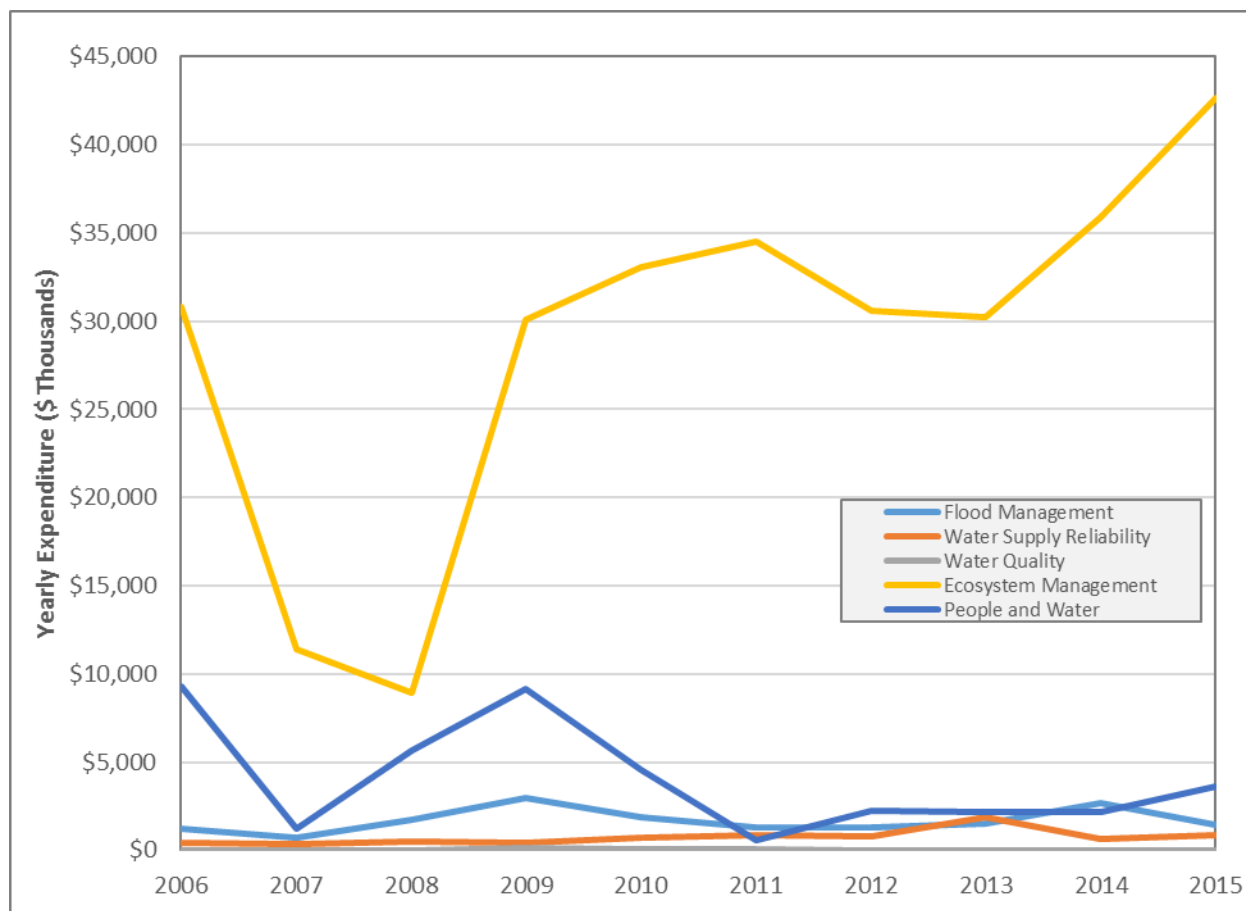


Figure 32 NOAA Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: Library of Congress, 2017d.

Notable observations of NOAA ongoing expenditures include:

- Ongoing expenditures for flood management expenditures were only five percent of the total ongoing expenditures, averaging approximately \$1.7 million per year. Maximum expenditures in flood management were in 2009, totaling approximately \$3 million. Funding for flood management supported meteorologic and hydrologic modernization efforts.
- Water supply reliability ongoing expenditures were only two percent of the total ongoing expenditures, averaging approximately \$747,000 per year. Maximum expenditures were in 2013. Expenditures supported climate change and drought related studies and weather data collection and refinement.
- Only a small amount of NOAA ongoing expenditures supported the water quality sector for investigations into water quality issues in wetlands, estuaries, and coastal zones. Many years (2007-2008, 2012-2015) did not have any expenditures for water quality. In all, ongoing expenditures for water quality totaled less than 0.1 percent of all ongoing expenditures.
- The majority of ongoing expenditures supported ecosystem management actions that supported studies into coastal and fisheries issues. More than 90 percent of all ongoing expenditures supported ecosystem management, averaging approximately \$29 million per year. The spike in

funding between 2009 through 2011 came from increased funding for studies on the impacts of climate change.

- Ongoing people and water expenditures were more than 10 percent of the total ongoing expenditures, averaging more than \$4 million per year. Maximum expenditures were in 2006 and supported science education programs.

Natural Resource Conservation Service

The Natural Resources Conservation Service (NRCS) is part of the United States Department of Agriculture (USDA), providing funding for farmers, ranchers, and forest landowners to boost agricultural productivity and protect natural resources through conservation (NRCS, 2015). Under the USDA, NRCS has very specific responsibilities related to resource conservation. As such, water resources management expenditures for NRCS have been separated from USDA expenditures and are discussed in this section while the remainder of USDA programs are discussed later in this document.

NRCS offers voluntary programs to eligible landowners and agricultural producers to provide financial and technical assistance to help manage natural resources in a sustainable manner. Through these programs NRCS approves contracts to provide financial assistance to help plan and implement conservation practices that address natural resource concerns or opportunities to help save energy, improve soil, water, plant, air, animal and related resources on agricultural lands and non-industrial private forest land. As such, NRCS funding is predominately allocated towards ecosystem management. However, funding is also directed to the flood management, water supply reliability, and people and water sectors.

From 2006 to 2015, the NRCS has provided funds for water management projects through 15 programs. These programs have assisted local agencies in providing technical assistance (for instance, conducting watershed surveys and investigations), ecosystem management (such as installing structural and land treatment measures for watershed protection), and encouraging conservation. Table 37 shows the NRCS funding programs, descriptions, as well as year program was established.

Table 37 NRCS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Agricultural Management Assistance	The Agricultural Management Assistance program provides financial and technical assistance to agricultural producers so that they can voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations. The program provides financial assistance of up to 75 percent of the cost of installing conservation practices, including: water management structures or irrigation structures; planting trees for windbreaks or to improve water quality; and mitigating risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming (NRCS, 2017a).	2009
Agricultural Water Enhancement Program	The Agricultural Water Enhancement Program is part of the Environmental Quality Incentives Program and leveraged investments in natural resources conservation. Agricultural producers are provided financial and technical assistance to implement agricultural water enhancement activities on agricultural land to conserve surface and	2009

Table 37 NRCS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	groundwater and improve water quality (NRCS, 2017b).	
Conservation Reserve Program	The Conservation Reserve Program was funded through the Commodity Credit Corporation and provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns. Through the program, farmers receive an annual rental payment for the term of a multi-year contract to convert farmland into vegetative cover. The Conservation Reserve Program was administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations, conservation planning and practice implementation. The program's objectives included reducing soil erosion, protecting food and fiber production, reducing sedimentation in streams and lakes, improving water quality, establishing wildlife habitat, and enhancing forest and wetland resources. It encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers (NRCS, 2017c).	2009
Conservation Security Program	The Conservation Security Program was a voluntary program that provided financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant and animal life, and other conservation purposes on Tribal and private working lands (NRCS, 2017d).	2009
Emergency Watershed Protection Program	<p>The Emergency Watershed Protection Program was developed to help communities reduce imminent hazards to life and property caused by floods, fire, drought, earthquake, windstorms, and other natural disasters. This program provides the following types of assistance:</p> <ul style="list-style-type: none"> • Exigency – An imminent threat exists to life and property that requires a Federal action (where work should be completed immediately). • Non-exigency – A threat exists to life or property that is high enough to constitute an emergency but is not urgent and compelling (work does not require immediate action but should be completed as soon as possible). <p>The program is designed for the installation of recovery measures to reduce risk and improve resiliency by helping people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. All projects undertaken, with the exception of the purchase of floodplain easements, must have a project sponsor (NRCS, 2017e).</p>	2005
Environmental Quality Incentives Program	The Environmental Quality Incentives Program is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. The program also may help producers comply with environmental permits and regulations (NRCS, 2017f).	2009
Agricultural Conservation Easement Program (formerly known as Farm and Ranch Lands Protection Program)	The Agricultural Act of 2014 established the Agricultural Conservation Easement Program (ACEP) and repealed the Farm and Ranch Lands Protection Program (FRPP). The FRPP provided funds to keep productive farm and ranchland in agricultural uses. The ACEP provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements component, NRCS helps Indian tribes, state and local	2009

Table 37 NRCS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	governments, and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands (NRCS, 2017g).	
Grassland Reserve Program	The Agricultural Act of 2014 established the Agricultural Conservation Easement Program (ACEP) and repealed the Grassland Reserve Program (GRP). The ACEP combined the purposes of the former Farm and Ranch Lands Protection Program and the Grassland Reserve Program in protecting the agricultural use and conservation values of eligible farm and ranch land. The GRP was a voluntary conservation program where participants limited development and cropping uses of land, while retaining the right for grazing practices and operations related to the production of forage and seeding. The program worked to protect grassland under the threat of conversion for the enhancement of plant and animal biodiversity (NRCS, 2017g).	2009
Ground and Surface Water Conservation and Environmental Quality Incentives Program	The Ground and Surface Water Conservation (GSWC) portion of the Environmental Quality Incentives Program (EQIP) is a voluntary program that provides assistance to farmers to conserve ground and surface water in agricultural operations. Activities may include improving irrigation systems, enhancing irrigation efficiencies, converting to the production of less water intensive agricultural commodities, converting to dryland farming, improving the storage of water through such measures as water banking and groundwater recharge, and mitigating the effects of drought. Activities must result in a net savings of groundwater or surface water resources in the agricultural operation of the producer (USDA, 2005).	2002
Resource Conservation and Development	Resource Conservation and Development (RC&D) is a unique program led by local volunteer councils that helps people protect and develop their economic, natural, and social resources in ways that improve their area's economy, environment, and quality of life. Local RC&D councils' members represent sponsoring organizations that include parish governments, soil and water conservation districts, towns, and other nonprofit groups. Section 2504 of the Farm Security and Rural Investment Act of 2002 permanently authorized the program. RC&D areas were established in the Agriculture Act of 1962 to provide a program that empowers local citizens to develop and carry out an action-oriented plan for the social, economic and environmental enrichment of their communities (NRCS, 2006).	1962
Soil and Water Conservation	The Soil and Water Resources Conservation Act of 1977 provides the USDA broad strategic assessment and planning authority for the conservation, protection, and enhancement of soil, water, and related natural resources. The USDA is authorized to (NRCS, 2017h): <ul style="list-style-type: none"> • Appraise the status and trends of soil, water, and related resources on non-Federal land and assess their capability to meet present and future demands; • Evaluate current and needed programs, policies, and authorities; and • Develop a national soil and water conservation program to give direction to USDA soil and water conservation activities. 	1977
Conservation Stewardship	The Conservation Stewardship Program (CSP) helps agricultural producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources	2008

Table 37 NRCS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	concerns. Participants earn CSP payments for conservation performance—the higher the performance, the higher the payment (NRCS, 2017i).	
Conservation Innovation Grants	Conservation Innovation Grants (CIG) is a voluntary program for Non-federal, private and tribal organizations, intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production. The intent of the state component is to provide flexibility to NRCS State Conservationists to target CIG funds to individual producers and smaller organizations that may possess promising innovations, but may not compete well on the larger scale of the national grants competition (NRCS, 2017j).	2002
Watershed Protection and Flood Prevention	The Watershed and Flood Prevention Operations (WFPO) Program includes the Flood Prevention Operations Program authorized by the Flood Control Act of 1944 (P.L. 78-534) and the provisions of the Watershed Protection and Flood Prevention Act of 1954 (P.L. 83-566). The Flood Control Act originally authorizes the Secretary of Agriculture to install watershed improvement measures in 11 watersheds, also known as pilot watersheds, to reduce flood, sedimentation, and erosion damage; improve the conservation, development, utilization, and disposal of water; and advance the conservation and proper utilization of land. The Watershed Protection and Flood Prevention Act provides for cooperation between the Federal government and the States and their political subdivisions in a program to prevent erosion, floodwater, and sediment damage; to further the conservation, development, utilization, and disposal of water; and to further the conservation and proper utilization of land in authorized watersheds (NRCS, 2017k).	1944
Watershed Rehabilitation Program	The Watershed Rehabilitation Program helps project sponsors rehabilitate aging dams that are reaching the end of their 50-year design lives. This rehabilitation addresses critical public health and safety concerns. Since 1948, NRCS has assisted local sponsors in constructing more than 11,800 dams (NRCS, 2017l).	1948
Wetlands Reserve Program	The Agricultural Act of 2014 established the Agricultural Conservation Easement Program and repealed the Wetlands Reserve Program (WRP). The WRP was a voluntary program that offered landowners the opportunity to protect, restore, and enhance wetlands on their property. The USDA Natural Resources Conservation Service (NRCS) provided technical and financial support to help landowners with their wetland restoration efforts, including the opportunity to establish long-term conservation and wildlife practices and protection. The goal of NRCS was to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program (NRCS, 2017m).	2009
Wildlife Habitat Incentive Program	The Agricultural Act of 2014 established the Agricultural Conservation Easement Program and repealed the Wildlife Habitat Incentive Program (WHIP). WHIP was a voluntary program for conservation-minded landowners who wanted to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and Indian land (NRCS, 2017n).	2009

Historical Expenditures

NRCS predominately funds, management actions in the flood management, ecosystem management, and people and water sectors. Programs that received funding include: Soil and Water Conservation, Agricultural Management Assistance, Environmental Quality Incentives, Agricultural Conservation Easement, and Emergency Watershed Protection.

NRCS programs have provided funding for capital and ongoing water resources management expenditures. There were no NRCS water resources management expenditures in 2006. Table 38 shows capital, ongoing, and total NRCS expenditures between 2006 and 2015. During this period, total expenditures in California averaged more than \$8 million per year. More than 90 percent of NRCS's water resources management expenditures were for capital management actions, with the remainder funding ongoing actions. Overall expenditures show a precipitous drop after 2010 due to diminished funding allocation to California from the U.S. Department of Agriculture. Figure 33 shows the total NRCS capital and ongoing expenditures between 2006 and 2015.

Table 38 NRCS Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$0	\$0	\$0
2007	\$10,408	\$648	\$11,056
2008	\$16,154	\$771	\$16,925
2009	\$15,109	\$1,282	\$16,391
2010	\$25,377	\$1,988	\$27,365
2011	\$6,817	\$1,816	\$8,633
2012	\$33	\$82	\$115
2013	\$190	\$0	\$190
2014	\$2,979	\$0	\$2,979
2015	\$702	\$0	\$702
Average	\$7,777	\$659	\$8,436

Source: Library of Congress, 2017a

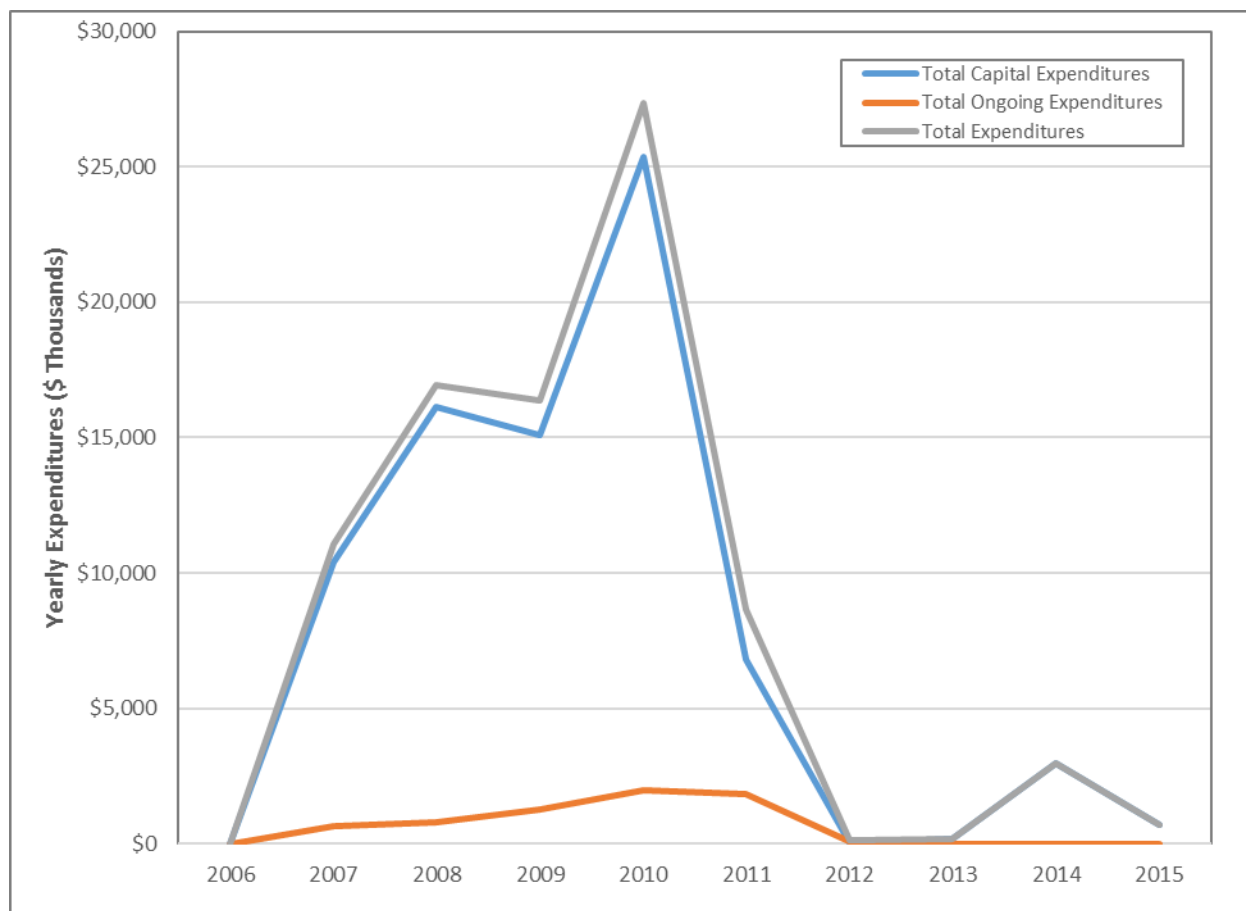


Figure 33 NRCS Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: Library of Congress, 2017a

NRCS Capital Expenditures

NRCS funded capital management actions that benefited flood management, ecosystem management, and people and water during the period. In years with expenditures, capital expenditures were highest in 2010, totaling approximately \$25 million, and the minimum expenditures were approximately \$33,000 in 2012. The peak in funding in 2010 was most likely a result of funding from the ARRA. Table 39 and Figure 34 show the total capital capital expenditures between 2006 and 2015, by water sector.

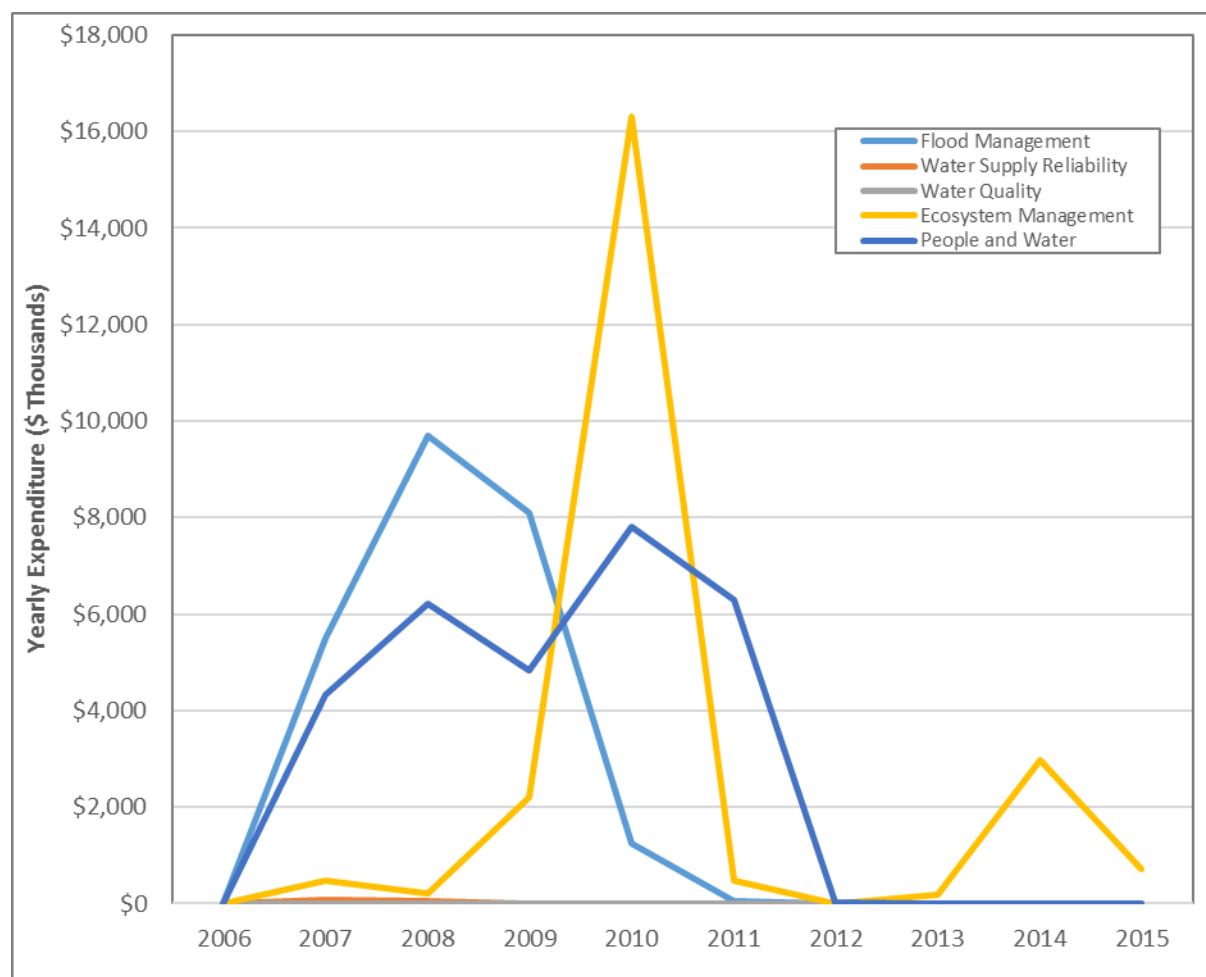
Table 39 NRCS Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$0	\$0	\$0
2007	\$5,499	\$86	\$0	\$487	\$4,336	\$10,408
2008	\$9,701	\$38	\$0	\$209	\$6,206	\$16,154
2009	\$8,094	\$0	\$0	\$2,193	\$4,822	\$15,109
2010	\$1,246	\$1	\$0	\$16,319	\$7,811	\$25,377
2011	\$48	\$0	\$0	\$462	\$6,306	\$6,816

Table 39 NRCS Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2012	\$0	\$0	\$0	\$0	\$33	\$33
2013	\$0	\$0	\$0	\$190	\$0	\$190
2014	\$0	\$0	\$0	\$2,979	\$0	\$2,979
2015	\$0	\$0	\$0	\$702	\$0	\$702
Average	\$2,459	\$12	\$0	\$2,354	\$2,952	\$7,777

Source: Library of Congress, 2017a

**Figure 34 NRCS Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015**

Source: Library of Congress, 2017a

Notable observations of NRCS capital expenditures from 2006 to 2015 include:

- More than 30 percent of NRCS capital expenditures supported flood management, averaging approximately \$2.5 million per year. Maximum expenditures occurred in 2008. NRCS actions in

the flood management sector provided assistance to reduce flood risk and improve resiliency on farmlands.

- Capital expenditures supporting water supply reliability accounted for less than 0.2 percent of total capital expenditures. During the 10-year period, only three years have water supply reliability capital expenditures: 2007, 2008, and 2010. The highest expenditures occurred in 2007, totaling approximately \$86,000. Actions supported by these expenditures were for water conservation efforts on farms.
- During the period, there were no water quality capital expenditures as this is not a responsibility of NRCS.
- Ecosystem management capital expenditures accounted for 30 percent of the total capital expenditures, averaging more than \$2.4 million per year. During the period, there were no ecosystem management capital expenditures for 2006 or 2012. Expenditures were at the highest in 2010 due to the ARRA, totaling more than \$16 million. Expenditures in this sector supported activities to protect watersheds and for farm and rangeland conservation.
- Capital expenditures supporting the people and water sector were approximately 40 percent of the total capital expenditures, averaging approximately \$3 million per year. People and water capital expenditures only occurred between 2007 and 2012, with maximum expenditures occurring in 2010 due to funding from the ARRA. Expenditures in this sector supported conservation of farmland and protecting agricultural uses of land.

NRCS Ongoing Expenditures

From 2006 through 2015, NRCS ongoing expenditures supported the ecosystem management and people and water sectors. In years with ongoing expenditures, maximum ongoing expenditures were approximately \$2 million in 2010, and minimum expenditures occurred in 2012, totaling approximately \$82,000. Across all water sectors, there were no ongoing expenditures from 2013 to 2015. Ongoing expenditures continually increased from 2007 to 2010. After 2010, ongoing expenditures steadily decreased until 2013. The increased funding in 2010 and 2011 is most likely from the ARRA. A significant amount of this funding supported the Soil and Water Conservation Program, which provided conservation technical assistance, and Watershed Protection and Flood Prevention program, which supported conservation of small watersheds. Table 40 and Figure 35 show the total ongoing expenditures between 2006 and 2015, by water sector.

Notable observations of NRCS ongoing expenditures include:

- From 2006 through 2015, there were no ongoing expenditures for the flood management, water supply reliability, and water quality sectors.
- Ecosystem management ongoing expenditures were approximately 20 percent of the total ongoing expenditures, averaging \$140,000 per year. Ongoing expenditures for ecosystem management only occurred in 2007 and from 2009 through 2011. During these years, maximum expenditures occurred in 2011, totaling approximately \$979,000. Expenditures supported incentives for wildlife habitat conservation and for local resource conservation and development efforts.
- The majority of ongoing expenditures supported the people and water sector, accounting for approximately 80 percent of ongoing expenditures, averaging approximately \$520,000 per year. Ongoing expenditures for people and water only occurred between 2007 and 2012, with a peak of approximately \$1.7 million in 2010 Due to the ARRA. Expenditures supported technical

assistance to support soil and water conservation

Table 40 NRCS Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$0	\$0	\$0
2007	\$0	\$0	\$0	\$50	\$598	\$648
2008	\$0	\$0	\$0	\$0	\$771	\$771
2009	\$0	\$0	\$0	\$40	\$1,242	\$1,282
2010	\$0	\$0	\$0	\$330	\$1,657	\$1,987
2011	\$0	\$0	\$0	\$979	\$837	\$1,816
2012	\$0	\$0	\$0	\$0	\$82	\$82
2013	\$0	\$0	\$0	\$0	\$0	\$0
2014	\$0	\$0	\$0	\$0	\$0	\$0
2015	\$0	\$0	\$0	\$0	\$0	\$0
Average	\$0	\$0	\$0	\$140	\$519	\$659

Source: Library of Congress, 2017a

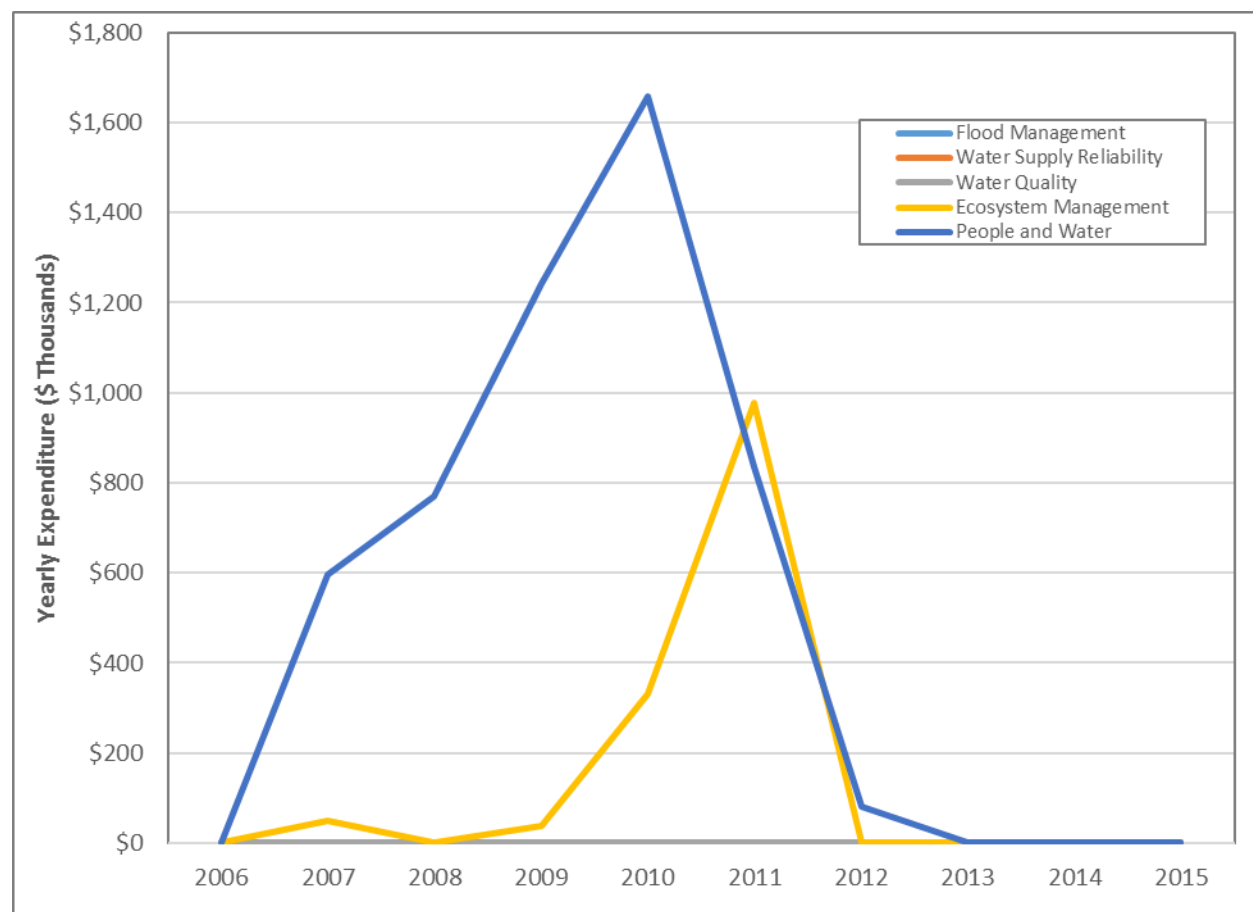


Figure 35 NRCS Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: Library of Congress, 2017a

U. S. Army Corps of Engineers

The USACE, under the United States Department of Defense, is one the largest public works engineering, design, and construction management agencies. The USACE mission is to “Deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation’s security, energize the economy and reduce risks from disasters,” (USACE, 2017). Water management activities within the USACE mission include: planning, design, construction, and operation of flood protection systems, locks and dams, dredging for waterway navigation, as well as environmental regulation and ecosystem restoration. USACE is organized geographically by division and by district. California is within the South Pacific Division headquartered in San Francisco. The South Pacific Division is divided into four districts, three of which are in California: San Francisco, Sacramento, and Los Angeles.

USACE funding for projects comes through the Water Resources Development Act, which provides for the conservation and development of water and related resources, and authorizes the Secretary of the Army to construct various projects for improvements to rivers and harbors of the U. S. and for other purposes. Obtaining funding from USACE is a lengthy process involving the federal budget process as summarized below:

- The Office of Management and Budget (OMB), the Assistant Secretary of the Army (Secretary), and the USACE Headquarters prepare and issue guidance to local offices for budget requests.
- The local Districts prepare and submit budget requests for individual projects and studies to the Divisions for review, revision, and submittal to the USACE Headquarters.
- Headquarters review, revise, and submit a nationwide budget request to the Secretary for review and submittal to OMB.
- OMB reviews and “passback” approved budget allowances for inclusion in the President’s budget.
- Testimony on individual projects and studies are prepared and presented to Congressional appropriations subcommittees in hearings.
- Congress develops and passes an appropriations act for the President’s signature. OMB apportions the funds to the USACE.
- USACE issues work allowances to the Districts.

In accordance with Program Development Guidance (USACE, 2011), USACE Civil Works budgeting has evolved, based on the following recent and significant shifts in policies and strategic goals:

- Assist in providing for safe and resilient communities and infrastructure
- Help facilitate commercial navigation in an environmentally and economically sustainable fashion
- Restore degraded aquatic ecosystems and prevent future environmental losses
- Implement effective, reliable, and adaptive life-cycle performance management of infrastructure
- Build and sustain a high-quality, highly dedicated workforce

USACE’s prioritization of studies and projects through business line budgeting and its subsequent funding will ensure that USACE projects are both cost-effective and completed in a timely manner,

resulting in the following:

- Funding fewer studies and projects in any given budget year
- Increased funding over shorter periods for fewer, high-priority projects
- More reliance on public-private partnerships to provide an adequate funding stream over a given period
- More sophisticated prioritization methodologies that focus on economic, environmental, life safety, and social criteria to ensure that the optimal mix of critical work is funded first

USACE has been an important force in implementing water management projects across California. In fact, most major water management projects that have been implemented have been projects in which USACE was a partner.

The State, particularly DWR, has been working closely with USACE on several projects. For example, DWR and USACE have partnered with local agencies on the State and Federal flood control system within the Central Valley. USACE is the primary source of Federal funds for flood management investment in California but also supports investment of a wide range of water infrastructure projects including reservoir operation and development, recycled water projects, and other projects with a national interest.

Historical Expenditures

USACE expenditures were primarily in the flood management, ecosystem management, and people and water sectors. On average, total USACE expenditures were more than \$230 million per year and have ranged from a minimum of approximately \$122 million in 2009 to approximately \$315 million in 2010.

These expenditures represent funding for studies, construction, and O&M for water resources management. Expenditures for 2007 are work plan numbers because a Federal budget, which would include official budget numbers, was not passed by Congress. The spike in USACE funding in FY 2010 is attributable to the passage of ARRA by Congress, which funded several projects in California, including the Guadalupe River Project, the Santa Maria River Levee Improvement Project, and the Napa River Flood Control Project. These expenditures reflect funds spent by USACE but do not include project cost-shares by local and State agency cosponsors. USACE Expenditures were approximately 60 percent for capital and 40 percent for ongoing management actions. Table 41 and Figure 36 show the total capital and ongoing USACE expenditures between 2006 and 2015.

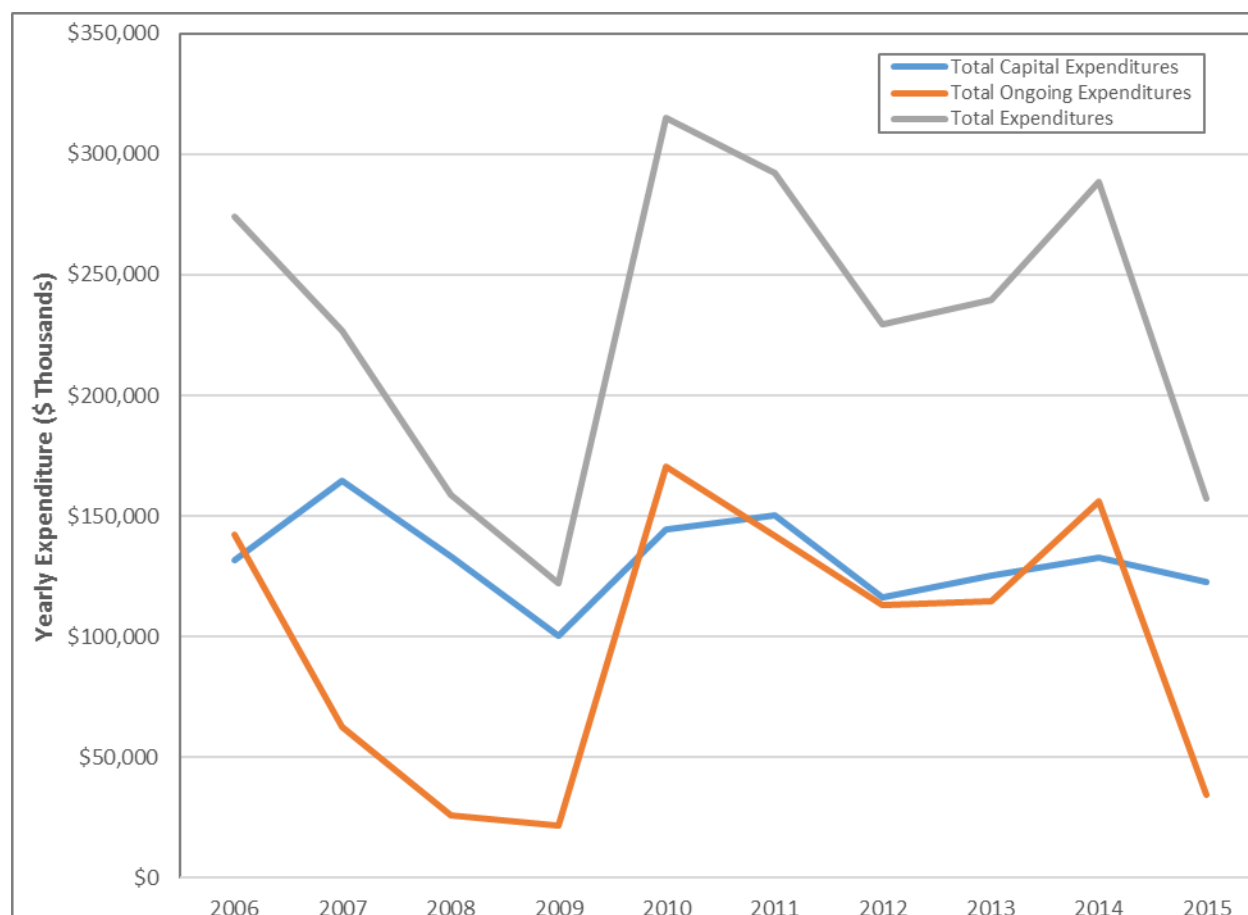
Table 41 USACE Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$131,820	\$142,371	\$274,191
2007	\$164,524	\$62,351	\$226,875
2008	\$133,203	\$25,830	\$159,033
2009	\$100,544	\$21,530	\$122,074
2010	\$144,218	\$170,612	\$314,830
2011	\$150,340	\$141,823	\$292,163
2012	\$116,137	\$113,118	\$229,255

Table 41 USACE Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2013	\$125,056	\$114,535	\$239,591
2014	\$132,537	\$156,174	\$288,711
2015	\$122,584	\$34,444	\$157,028
Average	\$132,096	\$98,279	\$230,375

Source: USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

**Figure 36 USACE Expenditures on Capital and Ongoing Actions in California, 2006 to 2015**

Source: USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

USACE Capital Expenditures

Between 2006 and 2015, average capital expenditures were more than \$132 million per year. Spikes in capital expenditures occurred in 2007, 2010, 2011, and 2014 due to significant funding being allocated to large flood management, ecosystem management, and people and water management actions. USACE capital expenditures were highest in 2007, totaling approximately \$165 million, with minimum expenditures occurring in 2009 (approximately \$101 million). Table 42 and Figure 37 show USACE

capital expenditures between 2006 and 2015, separated by water sector.

Table 42 USACE Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$63,624	\$100	\$0	\$65,396	\$2,700	\$131,820
2007	\$102,924	\$0	\$0	\$55,900	\$5,700	\$164,524
2008	\$85,403	\$0	\$0	\$46,900	\$900	\$133,203
2009	\$69,652	\$0	\$0	\$29,992	\$900	\$100,544
2010	\$110,933	\$0	\$0	\$22,400	\$10,885	\$144,218
2011	\$101,510	\$0	\$0	\$36,330	\$12,500	\$150,340
2012	\$86,357	\$0	\$0	\$26,280	\$3,500	\$116,137
2013	\$112,256	\$0	\$0	\$12,800	\$0	\$125,056
2014	\$112,437	\$0	\$0	\$18,600	\$1,500	\$132,537
2015	\$109,105	\$0	\$0	\$12,700	\$779	\$122,584
Average	\$95,420	\$10	\$0	\$32,730	\$3,936	\$132,096

Source: USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

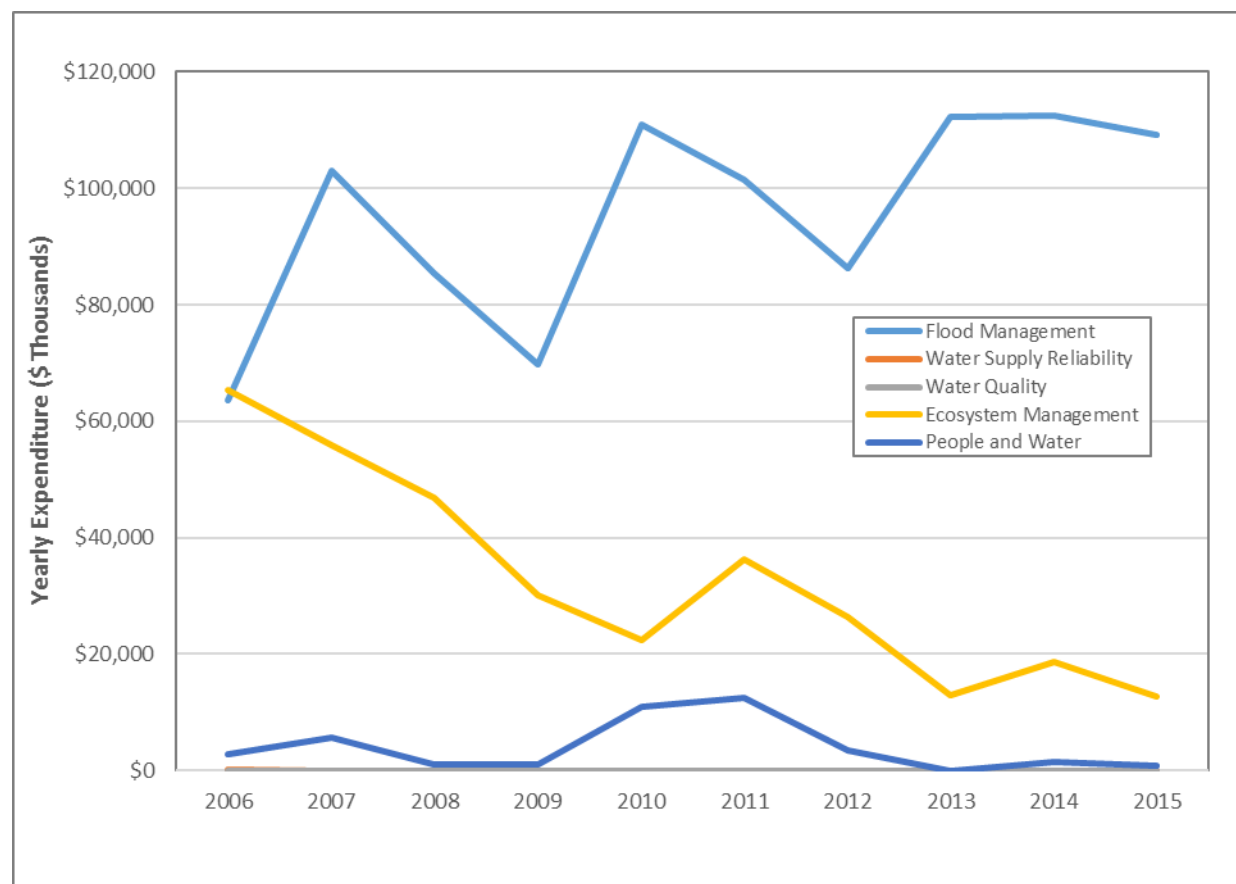


Figure 37 USACE Expenditures on Capital Actions in California, by Water Sector between 2006 to

2015

Source: USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Notable observations of USACE capital expenditures include:

- More than 70 percent of the capital expenditures were for the flood management sector. Maximum expenditures were in 2014, totaling more than \$112 million and included the Isabella Lake, Dam Safety project.
- Capital expenditures for water supply reliability management actions only occurred in 2006, accounting for only 0.1 percent of all total capital expenditures.
- From 2006 to 2015, there were no capital expenditures in the water quality sector.
- Approximately 25 percent of all capital expenditures supported ecosystem management actions, averaging approximately \$33 million per year. Maximum expenditures occurred in 2006, totaling more than \$65 million before declining for most of the period.
- Capital expenditures for people and water management actions were approximately 3 percent of all capital expenditures, averaging approximately \$4 million per year. Maximum expenditures occurred in 2011 with increased funding to the Environmental Quality and Protection Resource Management Program, which included the Sacramento Deepwater Ship Channel project.

USACE Ongoing Expenditures

From 2006 to 2015, USACE ongoing expenditures have fluctuated between three peaks: 2006, 2010, and 2014. Increased ongoing expenditures were due to significant funding being allocated towards larger flood management projects. For instance, o expenditures at Coyote Valley Dam, Lake Mendocino, Isabella Lake, New Hogan Lake, Pine Flat Lake, and others began in 2010 and continued through 2014. In addition, large ongoing expenditures occurred at the Santa Ana River Mainstem project in data management, totaling more than \$52 million. The spike in ongoing expenditures can also be attributed to ecosystem projects that collectively totaled more than \$15 million. Overall, average ongoing expenditures totaled more than \$98 million per year. Ongoing expenditures were highest in 2010, totaling approximately \$171 million, increasing from the minimum of approximately \$22 million in 2009. Table 43 and Figure 38 show USACE ongoing expenditures between 2006 and 2015, separated by water sector.

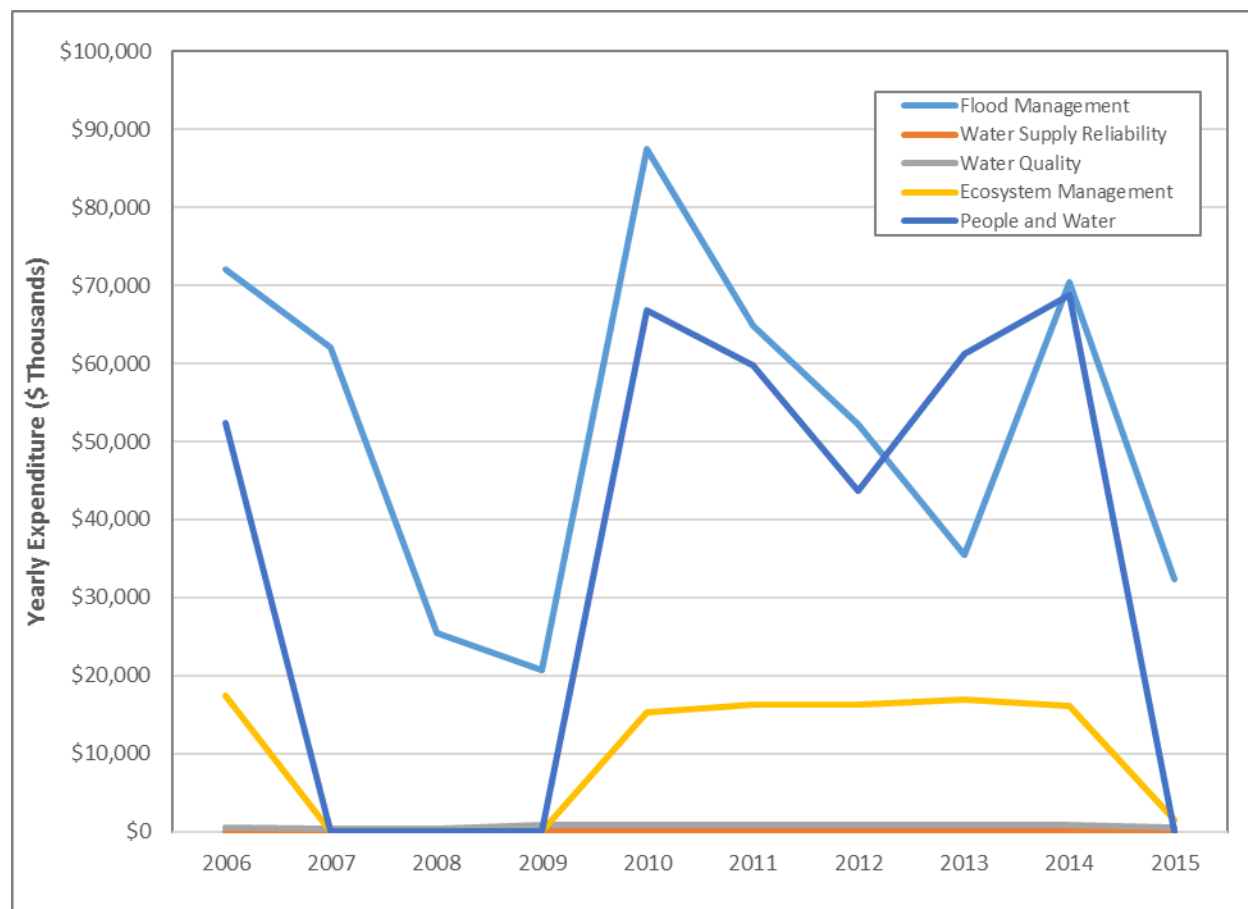
Table 43 USACE Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$72,017	\$0	\$600	\$17,393	\$52,361	\$142,371
2007	\$62,051	\$0	\$300	\$0	\$0	\$62,351
2008	\$25,530	\$0	\$300	\$0	\$0	\$25,830
2009	\$20,630	\$0	\$900	\$0	\$0	\$21,530
2010	\$87,527	\$0	\$900	\$15,340	\$66,845	\$170,612
2011	\$64,901	\$0	\$900	\$16,215	\$59,807	\$141,823
2012	\$52,214	\$0	\$900	\$16,268	\$43,736	\$113,118
2013	\$35,461	\$0	\$900	\$16,938	\$61,236	\$114,535
2014	\$70,507	\$0	\$800	\$16,119	\$68,748	\$156,174
2015	\$32,428	\$0	\$449	\$1,567	\$0	\$34,444
Average	\$52,327	\$0	\$695	\$9,984	\$35,273	\$98,279

Table 43 USACE Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
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Source: USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

**Figure 38 USACE Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015**

Source: USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Notable observations of USACE ongoing expenditures include:

- More than half of ongoing expenditures were for the flood management sector. Expenditures were highest in 2010 due to a number of projects including the Santa Ana River Basin project and Pine Flat Lake project.
- From 2006 to 2015, there were no ongoing expenditures for the water supply reliability sector.
- Less than one percent of all ongoing expenditures were for water quality, averaging \$695,000 per year. Throughout the period, the California Coastal Sediment Master Plan was the major water quality project supported by USACE ongoing expenditures.

- Ongoing expenditures for ecosystem management were approximately 10 percent of all ongoing expenditures, averaging approximately \$10 million per year. From 2007 through 2009, there were no ongoing expenditures for ecosystem management. Maximum expenditures occurred in 2006, totaling approximately \$17 million.
- Ongoing expenditures for the people and water sector were approximately 36 percent of ongoing expenditures, with a yearly average of approximately \$35 million. People and water expenditures were highest in 2014, totaling approximately \$69 million. Between 2007 and 2009, as well as 2015, USACE did not have ongoing expenditures for people and water.

U.S. Department of Interior, Bureau of Land Management

The U.S. Department of Interior Bureau of Land Management's (BLM) mission is to sustain the health, diversity, and productivity of public lands for the multiple use and enjoyment (BLM, 2017a). Congress tasked the BLM with a mandate of managing public lands for a variety of uses such as energy development, livestock grazing, recreation, and timber harvesting while ensuring natural, cultural, and historic resources are maintained. BLM manages more than 245 million acres of public lands and roughly 700 million acres of subsurface mineral estate.

In 2000, a new national land conservation system was created by order of the Secretary of the Interior, and assigned to BLM to manage. Codified into Federal law in the 2009 Omnibus Public Land Management Act is officially called the National Landscape Conservation System and includes a wide range of special areas, called National Conservation Lands, on the BLM administered public lands throughout the country. The mission of the National Landscape Conservation System is to conserve, protect, and restore these nationally significant landscapes that are recognized for their outstanding cultural, ecological, and scientific values. Nationally, the BLM manages more than 880 units of the System and approximately 27 million acres including national monuments, national conservation areas, national scenic and historic trails, wild and scenic rivers, wilderness areas, wilderness study areas, and other special areas designated by Congress and the President (BLM, 2017b). In California, the BLM oversees 15.2 million acres of public lands, approximately 15 percent of the State's total land mass, and 47 million acres of subsurface mineral estate (BLM, 2017C). These public lands extend across rangelands, forests, high mountains, and deserts.

The BLM manages three types of habitats to support conservation in pursuit of its multiple-use mission: rangelands, forests, and wetlands. BLM develops and implements strategies for healthy native plant communities and soil, air, and water management across all three habitats. To guide its efforts, BLM develops Resource Management Plans that serve as blueprints to keep public landscapes healthy and productive. Table 44 provides BLM programs, descriptions, and date program was established.

Table 44 BLM Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Challenge Cost Share	The Challenge Cost Share Program works through cooperative partners to help accomplish high priority work to support habitat improvement, comprehensive travel management, recreation, and cultural projects. The types of projects that can be funded include monitoring and inventory of resources; implementing habitat improvement or protection projects; developing threatened and endangered species recovery plans; protecting, stabilizing or documenting cultural resources; travel	1991

Table 44 BLM Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	management, including managing off-highway vehicle use; and providing enhanced recreational experiences, including visitor services, information, and facilities for public health and safety (Federal Grants Wire, 2017h).	
Conservation Corps	<p>The 21st Century Conservation Service Corps provides work and training opportunities to young people and veterans in order to develop the next generation of lifelong conservation stewards and protect, restore and enhance America's Great Outdoors. The program is administered by Department of the Interior and enters into cooperative agreements with recipient entities (CCC, 2015).</p> <p>The California Conservation Corps (CCC) is designated as a program recipient for federal funds intended for resource protection and conservation in the State. The CCC is a state work development program specifically for men and women between the ages of 18 to 25 (up to 29 for veterans), offering work in environmental conservation, fire protection, land maintenance, and emergency response to natural disasters (CCC, 2017).</p>	2008
Cooperative Ecosystem System Studies Unit Awards	A nationwide consortium of federal agencies, universities, conservation organizations, and other partners working together to support agency missions and informed public trust resource stewardship (Fish, 2015).	1999
Cultural Resource Management	The objective of BLM's Cultural and Paleontological Resources Management Program is to manage and protect cultural resources on the public lands and to increase public awareness and appreciation of these resources (CFDA, 2017r).	1966
Environmental Quality and Protection Resource Management	Provides financial assistance, through grants or cooperative agreements as a partnership to reduce or remove pollutants in the environment for the protection of human health, water and air resources; to restore damaged or degraded watersheds; and to respond to changing climate (CFDA, 2017s).	1976
Fire Studies & Hazard Reduction, Wildland Fire Research and Studies Program	BLM's Wildland Fire Research and Studies Program provides financial assistance, through cooperative agreements, to encourage interested parties to perform research and studies pertaining to wildland fire and resource management, to develop products and tools for all levels of decision making to meet the objectives of the National Fire Plan, and to seek information to improve decision making in wildland fire management (CFDA, 2017t).	1976
Fish Wildlife and Plant Conservation Resource Management	<p>As an integral part of the Bureau of Land Management's (BLM) mission, BLM provides national leadership to promote conservation of fish, wildlife and plant conservation, which will help restore and protect lands containing noteworthy resource values for regionally significant species of management concern or wetland and riparian areas. This is accomplished through:</p> <ul style="list-style-type: none"> • Restoration and protection of crucial habitat through vegetation treatments, installation of wildlife friendly fences, and creating fish passages or barriers to protect aquatic species. • Restoration of wildlife habitat to restore and protect sage grouse, desert tortoise, and other upland habitats for priority species as well as instream and riparian habitat for migratory birds, endangered or special status aquatic species and other native and priority species. 	1973 - Ongoing

Table 44 BLM Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	<ul style="list-style-type: none"> Increased on-the-ground project work to conserve, restore, and reduce the threats to sage-grouse and other sensitive species in high priority habitats. Consistent habitat monitoring across the range of the Greater Sage-Grouse and other landscape species using the Habitat Assessment Framework (HAF) and the land use plan habitat objectives for sage grouse and other priority species. Seed collections within priority species habitat and continue to develop genetically appropriate native and non-native plant material for use in habitat restoration. Work with partners to prioritize and implement priority species conservation actions. <p>The BLM manages these resources in cooperation with states, tribes, other federal agencies, and non-governmental organizations (CFDA, 2017u).</p>	
Forests and Woodlands Resource Management	The Forest and Woodland Resource Management program provides financial assistance, through grants or cooperative agreements, to public or private organizations for the improvement of forests on public lands. Activities commonly include the maintenance of forest health, forest regeneration, restoration, rehabilitation, insect and disease control, forest development, and providing for biomass utilization (CFDA, 2017v).	1976
Invasive and Noxious Plant Management	BLM offers grants and training to encourage interested State and local governments and Federal agencies to work together to inventory, manage, restore, educate, reduce the spread of, and prevent the further invasion and establishment of noxious, invasive weeds, and other invasive species. This is accomplished through support of the development and implementation of Integrated Pest Management Plans (IMPs) to develop and implementation of projects that foster consultation and cooperation among stakeholders, interested parties, and the public and to organize, finalize, and develop projects to implement IMPs for noxious weeds or invasive species within a specific geographic area (CFDA, 2017w).	1974
Management Initiatives	The program supports mission program efforts for the management, protection, and development of public lands managed by BLM. It provides BLM financial assistance awards not covered by any other program entry. Awards are typically supported by funding one-time specific legislation and internal projects and programs (CFDA, 2017x).	1976
Recreation Resource Management	The objective of this program is to manage recreational resource values on the public lands administered by BLM and to increase public awareness and appreciation of these values (CFDA, 2017y).	1976
Soil Water and Air Resources	The Soil, Water, and Air Program integrates soil, water, and air information with other disciplines, such as forestry and wildlife, to support the BLM's multiple use and sustained yield mission. This approach, referred to as the "landscape" or "watershed approach," enables the program to work with diverse partners in a variety of communities in the 12 western states (BLM, 2017d; BLM, 2017e).	1934
Weed Control	The Noxious Weed Control Act of 2004, establishes a program to provide assistance through States to eligible weed management entities to control or eradicate harmful, nonnative weeds on public and private lands (BLM, 2017e).	2004

Table 44 BLM Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Wildland Fire Research and Studies Program	The Wildland Fire Research and Studies Program provides funding to parties to perform research and studies related to wildland fire and resource management, specifically to meet the objectives of the National Fire Plan and to improve decision making in wildland fire management (Federal Grants Wire, 2017i).	2014
Wildlife Management (Other Than Sikes Act)	The National Fish and Wildlife Foundation Establishment Act, established the National Fish and Wildlife foundation as a non-profit corporation to encourage, accept and administer private gifts of property, and to undertake activities to further the conservation and management of fish, wildlife, and plant resources. The Migratory Bird Conservation Act of 1929 provides habitat protection and enhancement of protected migratory birds (BLM, 2012).	1984

Historical BLM Expenditures

BLM expenditures support the ecosystem management and people and water sectors. This is due to the large amount of land owned by BLM within California, as well as activities supporting Federally-Recognized Tribes. For example, the rise in capital expenses in 2004 was a result of BLM support of site preparation for the Agua Caliente Cultural Museum.

Table 45 presents a summary of total BLM water resources management expenditures. Between 2006 and 2015, historical expenditures averaged more than \$2.4 million per year. Of this, approximately 60 percent of all expenditures were for ongoing management actions, with the remaining expenditures supporting capital actions. More than 75 percent of the overall expenditures supported ecosystem management actions. Figure 39 shows BLMs' capital and ongoing expenditure within California between 2006 and 2015.

Table 45 BLM Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$364	\$443	\$807
2007	\$55	\$0	\$55
2008	\$0	\$0	\$0
2009	\$1,566	\$275	\$1,841
2010	\$607	\$640	\$1,247
2011	\$1,027	\$2,477	\$3,504
2012	\$1,928	\$2,708	\$4,636
2013	\$1,330	\$1,547	\$2,877
2014	\$1,408	\$3,280	\$4,688
2015	\$1,808	\$2,638	\$4,446
Average	\$1,009	\$1,401	\$2,410

Source: Library of Congress, 2017e

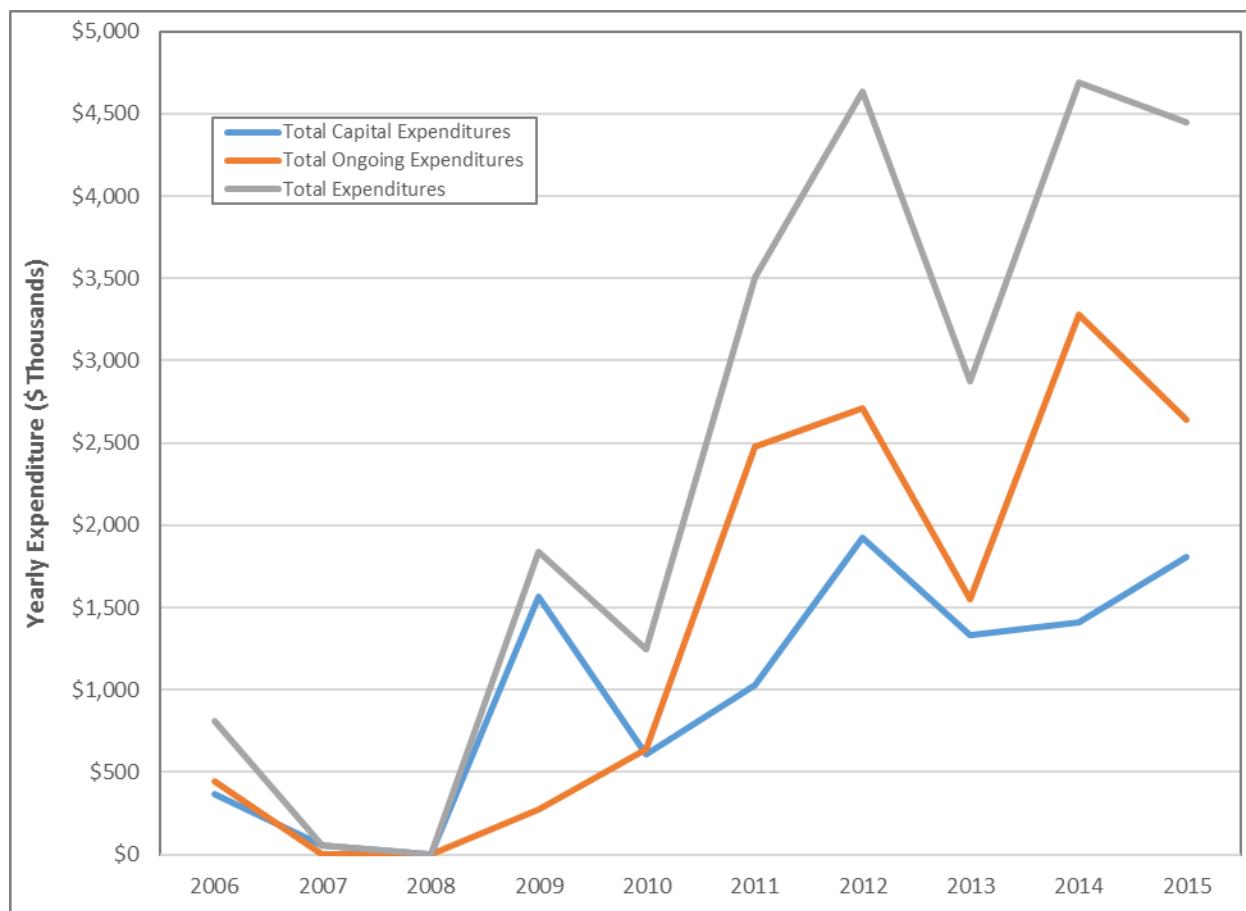


Figure 39 BLM Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: Library of Congress, 2017e

BLM Capital Expenditures

Between 2006 and 2015, capital expenditures averaged more than \$1 million per year. Maximum capital expenditures were \$1.9 million in 2012, with no capital expenditures reported for water resources management in 2008. Approximately 80 percent of all capital expenditures were for ecosystem management actions. Table 46 and Figure 40 show BLM capital expenditures between 2006 and 2015, separated by water sector.

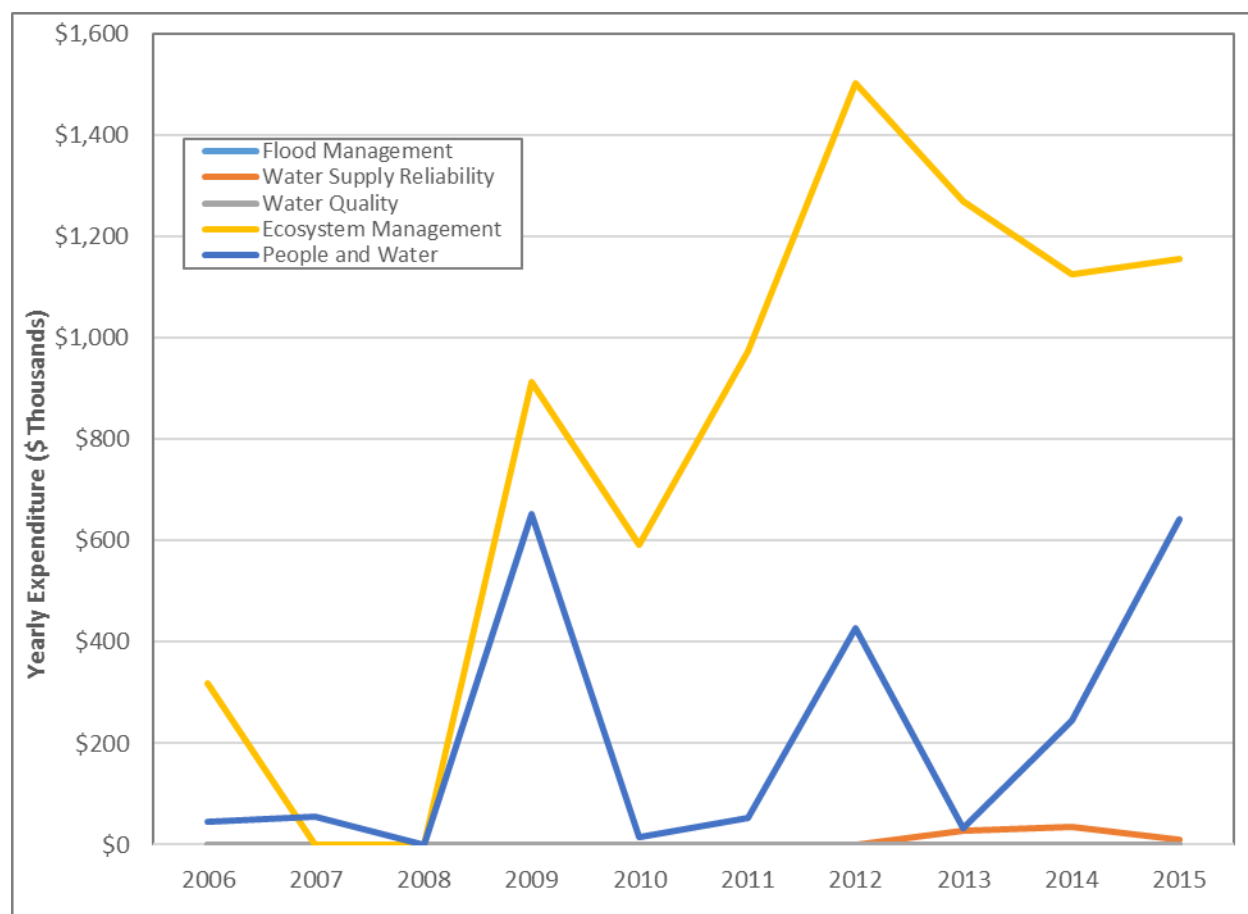
Table 46 BLM Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$319	\$46	\$365
2007	\$0	\$0	\$0	\$0	\$55	\$55
2008	\$0	\$0	\$0	\$0	\$0	\$0
2009	\$0	\$0	\$0	\$913	\$653	\$1,566
2010	\$0	\$0	\$0	\$592	\$15	\$607
2011	\$0	\$0	\$0	\$974	\$53	\$1,027

Table 46 BLM Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2012	\$0	\$0	\$0	\$1,501	\$426	\$1,927
2013	\$0	\$27	\$0	\$1,270	\$33	\$1,330
2014	\$0	\$36	\$0	\$1,126	\$246	\$1,408
2015	\$0	\$10	\$0	\$1,157	\$642	\$1,809
Average	\$0	\$7	\$0	\$785	\$217	\$1,009

Source: Library of Congress, 2017e

**Figure 40** BLM Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: Library of Congress, 2017e

Notable observations about BLM capital expenditures include:

- There were no capital expenditures for flood management or water quality sector as BLM does not have responsibility for these areas.
- Capital expenditures for water supply reliability totaled approximately one percent of all expenditures and only occurred between 2013 and 2015. Maximum expenditures during the

period were \$36,000 in 2014 to support well drilling to support wildlife and plant conservation areas.

- Annual capital expenditures for ecosystem management comprised approximately 80 percent of the total capital expenditures, averaging approximately \$785,000 per year. Maximum expenditures occurred in 2012 and included actions to restore and protect habitats and control invasive species.
- Annual capital expenditures for the people and water sector comprised more than 20 percent of the total capital expenditures, averaging more than \$217,000 per year. Maximum expenditure occurred in 2009 and included actions to study historic sites or provide support for recreational amenities such as trails and parks.

BLM Ongoing Expenditures

Between 2006 and 2015, average BLM ongoing expenditures were approximately \$1.4 million per year. Maximum ongoing expenditure totaled approximately \$3.3 million in 2014. BLM ongoing expenditures funded management actions in the ecosystem management and people and water sectors. Table 47 and Figure 41 shows BLM ongoing expenditures between 2006 and 2015, by water sector.

Table 47 BLM Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$419	\$24	\$443
2007	\$0	\$0	\$0	\$0	\$0	\$0
2008	\$0	\$0	\$0	\$0	\$0	\$0
2009	\$0	\$0	\$0	\$204	\$71	\$275
2010	\$0	\$0	\$0	\$241	\$399	\$640
2011	\$0	\$0	\$0	\$1,905	\$572	\$2,477
2012	\$0	\$0	\$0	\$2,132	\$576	\$2,708
2013	\$0	\$0	\$0	\$894	\$653	\$1,547
2014	\$0	\$0	\$0	\$2,713	\$566	\$3,279
2015	\$0	\$0	\$0	\$2,167	\$471	\$2,638
Average	\$0	\$0	\$0	\$1,068	\$333	\$1,401

Source: Library of Congress, 2017e

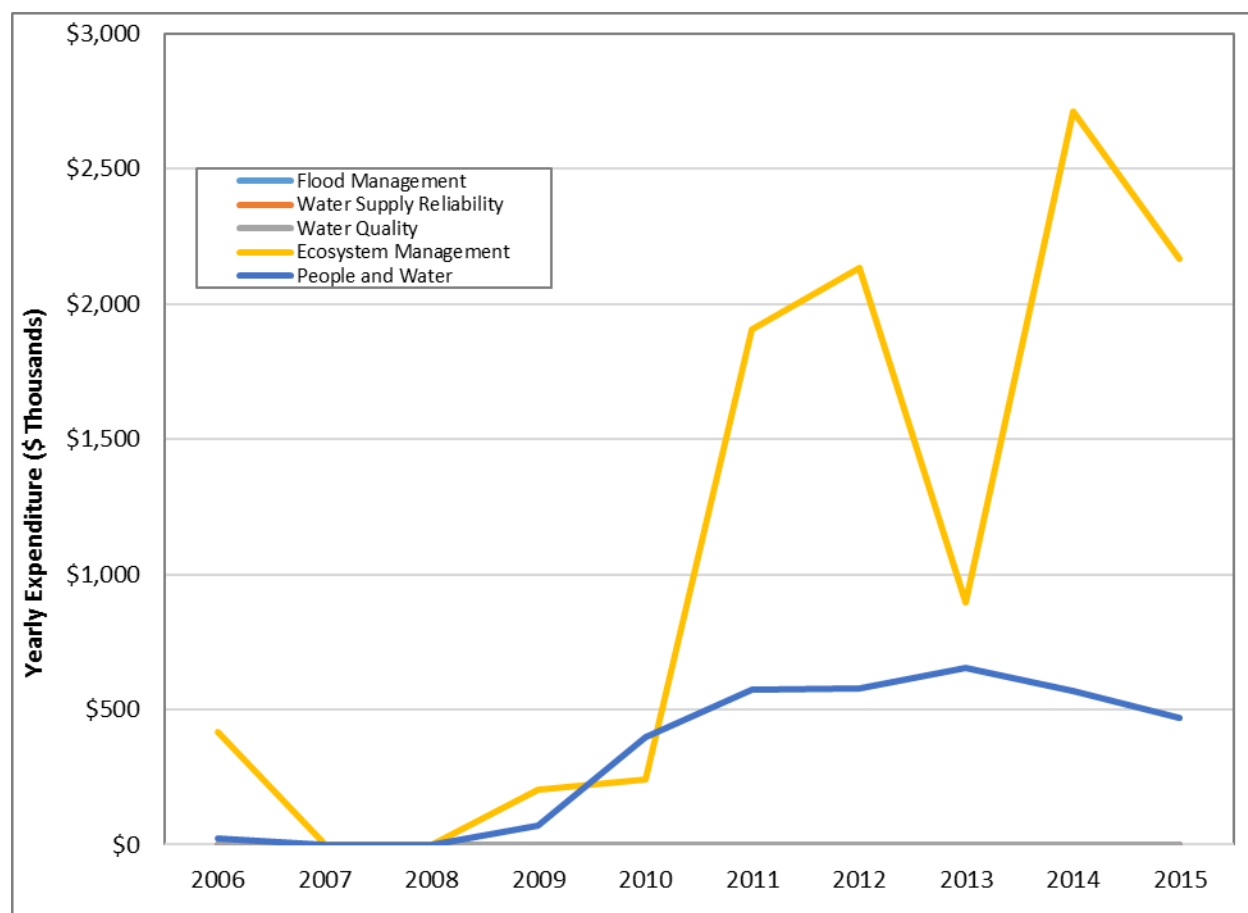


Figure 41 BLM Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: Library of Congress, 2017e

Notable observations about BLM capital expenditures include:

- There were no capital expenditures for flood management, water supply reliability, or water quality sectors as BLM does not have responsibility for these areas.
- Ongoing expenditures for ecosystem management actions comprised more than 75 percent of total ongoing expenditures, averaging approximately \$1.1 million per year. Maximum expenditures occurred in 2014 and supported actions such as bird and habitat monitoring and studies.
- Annual ongoing expenditures for the people and water sector comprised approximately 25 percent of total ongoing expenditures, averaging approximately \$333 million per year. The maximum expenditure occurred in 2013 and funded support for outreach programs and maintenance at educational or recreational areas.

U. S. Department of Interior, Bureau of Reclamation

The U.S. Department of Interior, Bureau of Reclamation (Reclamation) was established in 1902 to construct water projects such as dams, reservoirs, and canals in the 17 western states, leading to homesteading and economic development. Today, Reclamation is the largest wholesaler of water and

second largest producer of hydroelectric power in the country. The primary responsibility of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner. Reclamation also manages reservoirs and other facilities in conjunction with the USACE as part of the flood management system. Reclamation provides local and state governments with funding for water supply reliability, water quality, ecosystem management, and activities related to the people and water sectors.

Reclamation is organized into five Regions, three of which are in California: Pacific Northwest, Mid Pacific, and the Lower Colorado. Most of California falls entirely within two Regions: Mid Pacific and the Lower Colorado. However, portions of small, mountainous areas in Northern California fall under the jurisdiction of the Pacific Northwest. The Mid Pacific Region is responsible for projects in Northern California, and the Lower Colorado Region is responsible for projects in Southern California.

Reclamation's budget for Water and Related Resources are divided into two major categories:

- Project and program level funding for water, energy, land, and fish and wildlife resource management and development activities. Funding in these activities provides for planning, construction, water sustainability activities, management of Reclamation lands including recreation areas, and actions to address the impacts of Reclamation projects on fish and wildlife.
- Project level funding for water and power facility operations, maintenance, and rehabilitation activities.

Reclamation also provides funding for water reuse via the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI of Public Law 102-575), known as Title XVI. Title XVI directs the Secretary of the Interior to undertake a program to investigate and identify opportunities for water reclamation and reuse of municipal, industrial, domestic and agricultural wastewater, and naturally impaired ground and surface waters, and for design and construction of demonstration and permanent facilities to reclaim and reuse wastewater. It also authorized Reclamation to conduct research, including desalting, for the reclamation of wastewater and naturally impaired ground and surface waters. Title XVI includes funding for the planning, design, and construction of water recycling and reuse projects, on a project specific basis, in partnership with local government entities.

In California, Reclamation funding is predominately directed towards water supply reliability, due to ongoing expenditures needed for the operation of the CVP. Table X describes the Reclamation projects and programs that contribute to water management in California. Table 48 shows Reclamation's funding programs and descriptions.

Table 48 Reclamation Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Central Valley Project	The Central Valley Project (CVP) is a multi-purpose project with facilities that extend from the Cascade Range in the north to the Kern River in the south. Initial features of the project were built primarily to protect the Central Valley from crippling water shortages and menacing floods, but the CVP also improves Sacramento River navigation, supplies domestic and industrial water, generates electric power, conserves fish and wildlife, creates opportunities for recreation, and enhances water quality. The	1937

Table 48 Reclamation Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	<p>CVP consists of 20 dams and reservoirs, 11 power plants, and 500 miles of major canals, conduits, tunnels and related facilities.</p> <p>The CVP is divided into divisions and units including (Reclamation, 2017a):</p> <ul style="list-style-type: none"> • Shasta Division • Trinity River Division • Pit River Division • American River Division -- Auburn-Folsom South Unit, Folsom Unit, and Sly Park Unit • Delta Division • Friant Division • East Side Division – New Melones Unit • Sacramento River Division – Sacramento Canals Unit • San Felipe Division • San Joaquin Division • West San Joaquin Division – San Luis Unit 	
WaterSmart Program	WaterSMART Water and Energy Efficiency Grants provide cost-shared funding for projects that save water; increase energy efficiency and the use of renewable energy in water management; support environmental benefits (i.e., make conserved water available instream or otherwise address endangered species issues); mitigate conflict risk in areas at a high risk of future water conflict; and accomplish other benefits that contribute to water supply sustainability in the western U.S. (Reclamation, 2017b).	2010
Title XVI reuse and recycling	<p>Title XVI of P.L. 102-575, as amended (Title XVI), provides authority for Reclamation's water recycling and reuse program. The original act authorized Reclamation to participate in the construction of 5 recycling projects and 3 feasibility studies. In 1996, Congress amended Title XVI and authorized Reclamation to participate in an additional 18 projects. Since then, Congress has amended Title XVI several times to authorize Reclamation to participate in additional projects. The act, as amended to-date, has authorized a total of 36 specific projects in California, as listed below (Reclamation, 2015). Title XVI authorized projects in California (Reclamation, 2017c):</p>	1992
	<ul style="list-style-type: none"> • Los Angeles Area Water Reclamation and Reuse Project, • Los Angeles Basin Augmentation Demo, • Port Hueneme Desalination, • San Diego Area Water Reclamation Program, • San Gabriel Basin Demonstration Project, • San Jose Area Water Reclamation and Reuse Program 	1992
	<ul style="list-style-type: none"> • Calleguas Municipal Water District Recycling Plant, • City of Pasadena, • San Joaquin Area Water Recycling and Reuse Project • Eastern Municipal Water District Recycled Water System Pressurization and Expansion Project, • Hi-Desert Water District Wastewater Collection and Reuse Facility, • Long Beach Area Water Reclamation Project, 	1996

Table 48 Reclamation Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	<ul style="list-style-type: none"> Long Beach Desalination Research and Development Project, Mission Basin Brackish Groundwater Desalting Project, North San Diego Area Water Recycling Project, Orange County Regional Water Reclamation Project, Watsonville Area Water Recycling Project 	
	Irvine Basin Groundwater and Surface Water Improvement Projects	2004
	<ul style="list-style-type: none"> Antioch Recycled Water Project, Cucamonga Valley Water Recycling Project, Inland Empire Regional Water Recycling Project, Mountain View, Moffett Area Reclaimed Water Pipeline Project, North Coast County Water District Recycled Water Project, Pittsburg Recycled Water Project, Redwood City Recycled Water Project, South Bay Advanced Recycled Water Treatment Facility, South Santa Clara County Water District Recycled Water Project, Southern California Desert Region Integrated Water and Economic Sustainability Plan 	2008
	<ul style="list-style-type: none"> City of Corona Water Recycling and Reuse Project Elsinore Valley Municipal Water District Projects, Lower Chino Dairy Area Desalination Demonstration & Reclamation Project, North Bay Water Reuse Program, Oxnard, California, Water Reclamation, Reuse, and Treatment Project, Prado Basin Natural Treatment System Project, Rancho California Water District Project, Yucaipa Valley Regional Water Supply Renewal Project 	2009
Cachuma Project	The Cachuma Project captures the seasonal floodwaters of the Santa Ynez River for use in the South Coast region, including Santa Barbara and the surrounding cities, as well as approximately 38,000 acres of outlying agricultural lands (Reclamation, 2017d).	1949
Santa Maria Project	The Santa Maria Project is a joint water conservation and flood control project. It consists of the Twitchell Dam where construction began in July 1956 and was completed in October 1958. The Reservoir was constructed by the Bureau of Reclamation, and a system of river levees was constructed by USACE (Reclamation, 2017e).	1954
Ventura River Project	The Ventura River Project is a seacoast project that captures seasonal floodwaters for beneficial use. The project is located on the Pacific coast, about 60 miles northwest of Los Angeles, covering 90,000 acres. The Ventura River and its tributaries are the main water sources for the project. The Ventura River bisects the lower, southern portion of this area, and flows to the Pacific Ocean (Reclamation, 2017f).	1956
Klamath Project	The Klamath Project covers territory in Klamath County, Oregon, and Siskiyou and Modoc counties in northern California. Clear Lake Dam and	1905

Table 48 Reclamation Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	Reservoir, Tule Lake, and Lower Klamath Lake lie south of the Oregon-California border. The irrigable lands of the Klamath Project are in south-central Oregon (62 percent) and north-central California (38 percent). The Project provides full service water to approximately 240,000 acres of cropland. Two main sources supply water for the project: Upper Klamath Lake and the Klamath River; and Clear Lake Reservoir, Gerber Reservoir, and Lost River, which are in a closed basin. The total drainage area, including the Lost River and the Klamath River watershed above Keno, Oregon, is approximately 5,700 square miles. Major uses of the Klamath River include: Municipal, Agricultural, Hydropower, Recreation, Flood Control, and Fish and Wildlife (Reclamation, 2017g).	
Salton Sea Research Project	<p>Since the mid-1960's, studies have been conducted to determine methods of addressing the high salinity and water quality problems of southern California's Salton Sea and to help maintain its agricultural, environmental, and recreational values. In August 1994, the Salton Sea Authority, Reclamation, and DWR signed an agreement that provided the basis for a cooperative effort to evaluate problems at the Salton Sea.</p> <p>The Salton Sea Reclamation Act of 1998 (Public Law 105-372) directed the Secretary of the Interior, through Reclamation, to study options for managing the salinity and elevation of the Sea to preserve fish and wildlife health and to enhance opportunities for recreation use and economic development while continuing the Sea's use as a reservoir for irrigation drainage.</p> <p>In January 2003, a status report was released by the Secretary of the Interior about the project, and in September of the same year, legislation was passed in which the State of California accepted responsibilities for ecosystem restoration at the Sea. The legislation directs DWR to prepare an ecosystem restoration study and programmatic environmental document. The study, conducted in consultation with a legislatively mandated advisory committee and with the Authority, includes a proposed funding plan for implementing the preferred alternative. Reclamation continues to work with DWR and the Authority in a technical assistance role, and is funding a number of studies. In December 2007, Reclamation published a Final Report and Summary Report about the agency's study efforts to determine a preferred alternative action for managing the Salton Sea. As part of this effort, Reclamation continues to collect quarterly water samples at the Sea and influent rivers since 1999 to monitor salinity, selenium, nitrogen, phosphorus, and other water quality parameters (Reclamation, 2017h).</p>	1994
Lahontan Basin Project	The Newlands Project is one of Reclamation's first irrigation projects which began in 1903 to provide irrigation water to the Lahontan Valley and to lands in the Truckee Basin. Reclamation has a contract with the Truckee-Carson Irrigation District to operate and maintain the Newlands Project on behalf of the Federal government. The Newlands Project has features in both the Carson and Truckee River basins with the Truckee Canal allowing interbasin diversions from the Truckee River to the Carson River. The Newlands Project is made up of two divisions, the Truckee Division and the Carson Division. The Truckee division delivers irrigation service to approximately 5,000 acres of irrigated lands. The Carson Division delivers irrigation water to approximately 55,000 acres of farmland. Lake Tahoe Dam is one of the facilities in the Newlands Project. The dam controls the top six feet of Lake Tahoe and regulates	1903

Table 48 Reclamation Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	the lake outflow into the Truckee River (Reclamation, 2017i).	
Orland Project	The Orland Project, in north-central California, is in the Sacramento Valley about 100 miles north of Sacramento. The project incorporates parts of neighboring Glenn, Tehama, and Colusa Counties. One of the smallest and oldest projects ever tackled by Reclamation, the project irrigates one percent of the Sacramento Valley's total irrigable soil, 20,000 acres. Water was delivered to the first farm units at the beginning of the 1910 growing season. The project is irrigated by Stony Creek, a tributary of the Sacramento River. The Orland Project is comprised of two main dams that store water, East Park and Stony Gorge, two diversion dams, almost 17 miles of canals, and 139 miles of laterals (Reclamation, 2017j)	1907
Solano Project	The Solano Project is mostly in Solano County, California. Monticello Dam is the main project feature. Lake Berryessa, the reservoir area behind Monticello Dam is in Napa County. Other important features are Putah Diversion Dam, Putah South Canal with a small terminal reservoir, and the necessary wasteways, laterals, and drainage works. The project was designed to irrigate approximately 96,000 acres of land. In 1992, the total irrigated area was 71,445 acres. The project also furnishes municipal and industrial water to the principal cities of Solano County. Putah Creek is the source of water for the Solano Project (Reclamation, 2017k)	1957
Endangered Species Recovery Implementations	Reclamation's Endangered Species Act recovery programs directly address the environmental aspects of the Reclamation mission. In order to meet its mission goals related to delivering water and generating power, a part of Reclamation's programs focuses on the protection and restoration of the aquatic and riparian environments influenced by its operations. Recovery programs are implemented within the CVP and Klamath Project (Reclamation, 2017l).	1973
Soboba Water Rights Settlement Project	<p>This project is in the Hemet/San Jacinto Groundwater Basin in Riverside County, California. The Soboba Band of Luiseno (Tribe) Indians Settlement Act (Act), P.L. 110-297, was enacted in 2008 to ratify the Tribe's Settlement Agreement dated June 7, 2006, as amended, to resolve Tribal water rights and other water related issues addressed in the Agreement. Among other things, the Act authorizes appropriations for two funds (Reclamation, 2017m):</p> <ul style="list-style-type: none"> • San Jacinto Basin Restoration Fund (Restoration Fund) - The Restoration Fund will pay or reimburse the costs associated with construction, operating, and maintaining the portion of the basin recharge project that the U.S. is responsible for under the Settlement Agreement. The Act authorizes appropriations "to the Fund" in the amount of \$5,000,000 in 2010 and \$5,000,000 in 2011. Section 6 of the Act describes the administration of the Restoration Fund by the Secretary of the Interior. • Development Fund - This fund will pay or reimburse the costs associated with constructing, operating, and maintaining water and sewage infrastructure, and other water-related development projects. The Act authorizes appropriations "to the Tribe" in the amount of \$5,500,000 in 2010 and \$5,500,000 in 2011. The Bureau of Indian Affairs is responsible for funding the Development Fund. 	2008

Table 48 Reclamation Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
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Historical Reclamation Expenditures

Historical expenditures for Reclamation were collected and analyzed by region for the water management projects (Reclamation, 2012, 2015). Table 49 provides a summary of total Reclamation water management expenditures for water resources management expenditures. Historical expenditures between 2006 to 2015 averaged approximately \$227 million per year, with ongoing expenditures accounting for 75 percent and the capital expenditures accounting for 25 percent of total ongoing expenditures. More than 65 percent of the expenditures funded water supply reliability management actions. Figure 42 shows capital and ongoing expenditures for Reclamation in California.

Table 49 Reclamation Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$48,825	\$162,775	\$211,600
2007	\$39,396	\$166,575	\$205,971
2008	\$48,627	\$164,027	\$212,654
2009	\$38,732	\$168,663	\$207,395
2010	\$63,288	\$173,046	\$236,334
2011	\$97,330	\$185,847	\$283,177
2012	\$79,018	\$162,748	\$241,766
2013	\$64,767	\$160,364	\$225,131
2014	\$42,667	\$195,493	\$238,160
2015	\$39,390	\$168,049	\$207,439
Average	\$56,204	\$170,759	\$226,963

Source: Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014

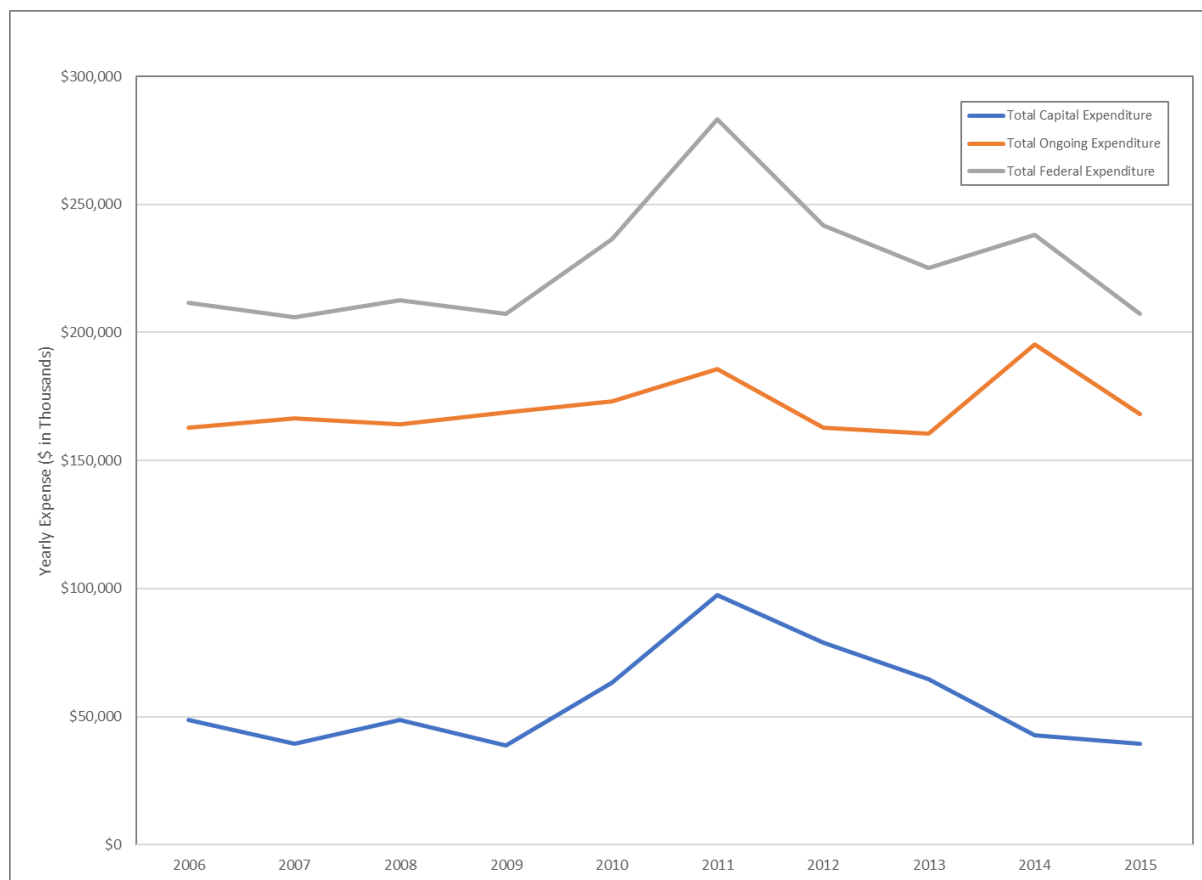


Figure 42 Reclamation Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014

Reclamation Capital Expenditures

Between 2006 and 2015, capital expenditures by Reclamation for water resources management were on average more than \$56 million per year. Capital expenditures ranged from a high of more than \$97 million in 2011 to a low of approximately \$39 million in 2009. More than 70 percent of the capital expenditures supported the ecosystem management sector. Table 50 and Figure 43 show Reclamation capital expenditures between 2006 and 2015, by water sector.

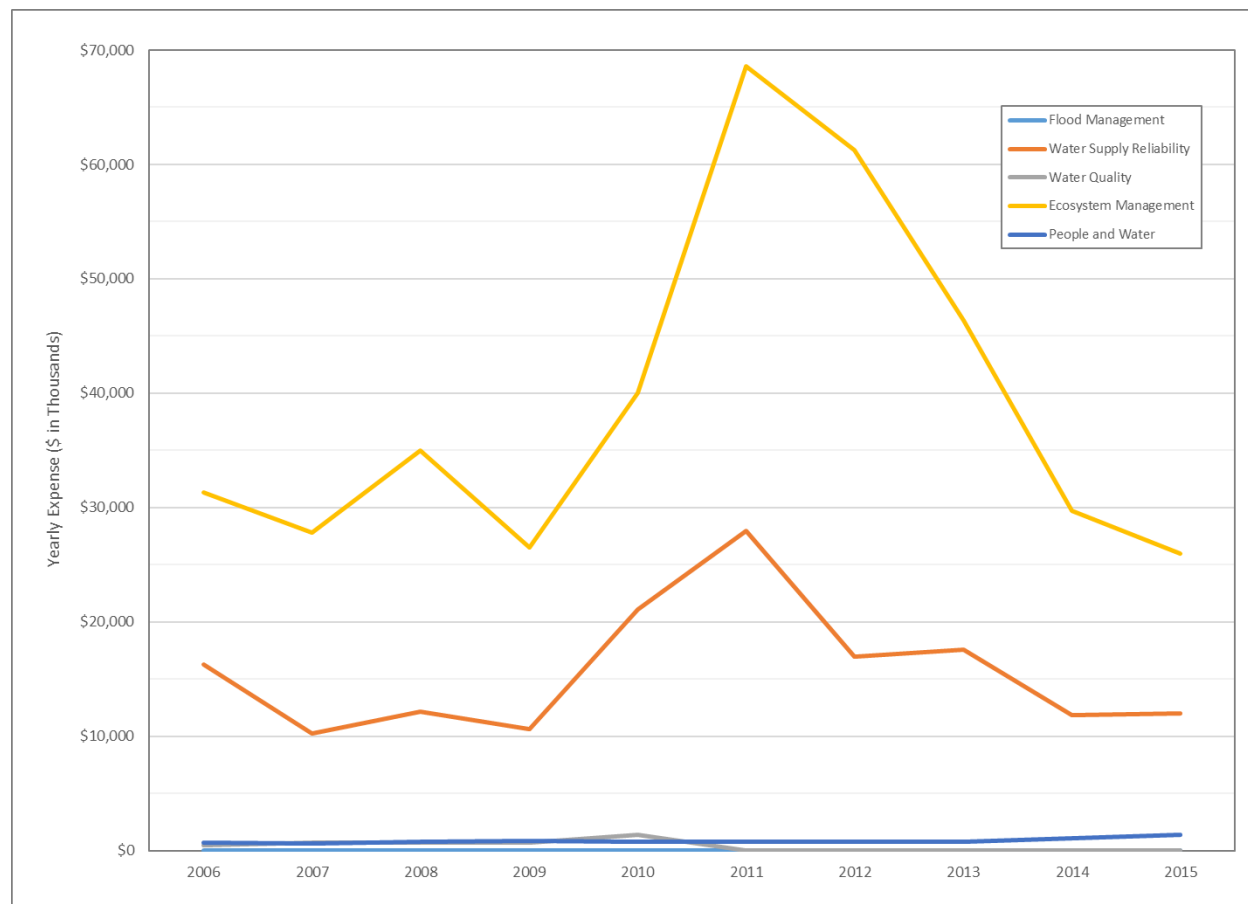
Table 50 Reclamation Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$16,261	\$500	\$31,324	\$741	\$48,826
2007	\$0	\$10,228	\$743	\$27,783	\$642	\$39,396
2008	\$0	\$12,146	\$700	\$34,960	\$821	\$48,627
2009	\$0	\$10,667	\$700	\$26,540	\$825	\$38,732
2010	\$0	\$21,075	\$1,400	\$40,063	\$750	\$63,288
2011	\$0	\$27,967	\$0	\$68,613	\$750	\$97,330
2012	\$0	\$16,996	\$0	\$61,222	\$800	\$79,018

Table 50 Reclamation Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2013	\$0	\$17,601	\$0	\$46,366	\$800	\$64,767
2014	\$0	\$11,843	\$0	\$29,749	\$1,075	\$42,667
2015	\$0	\$11,998	\$0	\$25,982	\$1,410	\$39,390
Average	\$0	\$15,678	\$404	\$39,260	\$861	\$56,204

Source: Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014

**Figure 43 Reclamation Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015**

Source: Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014

Notable observations about Reclamation capital expenditures include:

- There were no capital expenditures for flood management sector as construction of flood systems typically falls under the purview of USACE.
- Expenditures were highest for water supply reliability averaging approximately \$16 million per year. Maximum expenditures of more than \$28 million occurred in 2011 and supported water recycling, desalination, and water rights settlement efforts.

- Reclamation, Lower Colorado Region water quality expenditures were 1 percent of the total capital expenditures with an average of \$400,000. The maximum expenditure during the period was in 2010 and provided funding for the San Gabriel Basin project. No expenditures occurred between 2011 and 2015.
- Capital expenditures for ecosystem management comprised approximately 70 percent of the total capital expenditures, averaging more than \$39,000 per year. Maximum expenditures were approximately \$69,000 in 2011 and predominantly supported projects for fish screening.
- Capital expenditures for people and water sectors comprised 2 percent of the total capital expenditures, averaging more than \$860,000 per year. Maximum expenditures of \$1.4 million occurred in 2015 to support the Klamath River Project.

Reclamation Ongoing Expenditures

Between 2006 and 2015, ongoing expenditure by Reclamation averaged approximately \$171 million per year. Ongoing expenditures ranged from a high of \$195 million in 2014 to a low of \$160 million in 2013. A majority of Reclamation ongoing expenditures funded water supply reliability actions (more than 75 percent). Table 51 and Figure 44 show Reclamation ongoing expenditures between 2006 and 2015, by water sector.

Table 51 Reclamation Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$15,822	\$132,073	\$0	\$4,254	\$10,628	\$162,777
2007	\$17,751	\$132,018	\$0	\$6,425	\$10,383	\$166,577
2008	\$19,463	\$130,215	\$0	\$3,906	\$10,444	\$164,028
2009	\$22,592	\$132,560	\$0	\$3,609	\$9,902	\$168,663
2010	\$24,985	\$131,281	\$0	\$6,391	\$10,389	\$173,046
2011	\$24,284	\$139,455	\$1,500	\$9,956	\$10,652	\$185,847
2012	\$21,404	\$126,257	\$1,294	\$3,855	\$9,938	\$162,748
2013	\$22,405	\$122,514	\$1,563	\$3,703	\$10,179	\$160,364
2014	\$22,583	\$156,573	\$1,246	\$4,608	\$10,483	\$195,493
2015	\$21,245	\$130,809	\$1,025	\$4,381	\$10,590	\$168,050
Average	\$21,253	\$133,375	\$663	\$5,109	\$10,359	\$170,759

Source: Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014

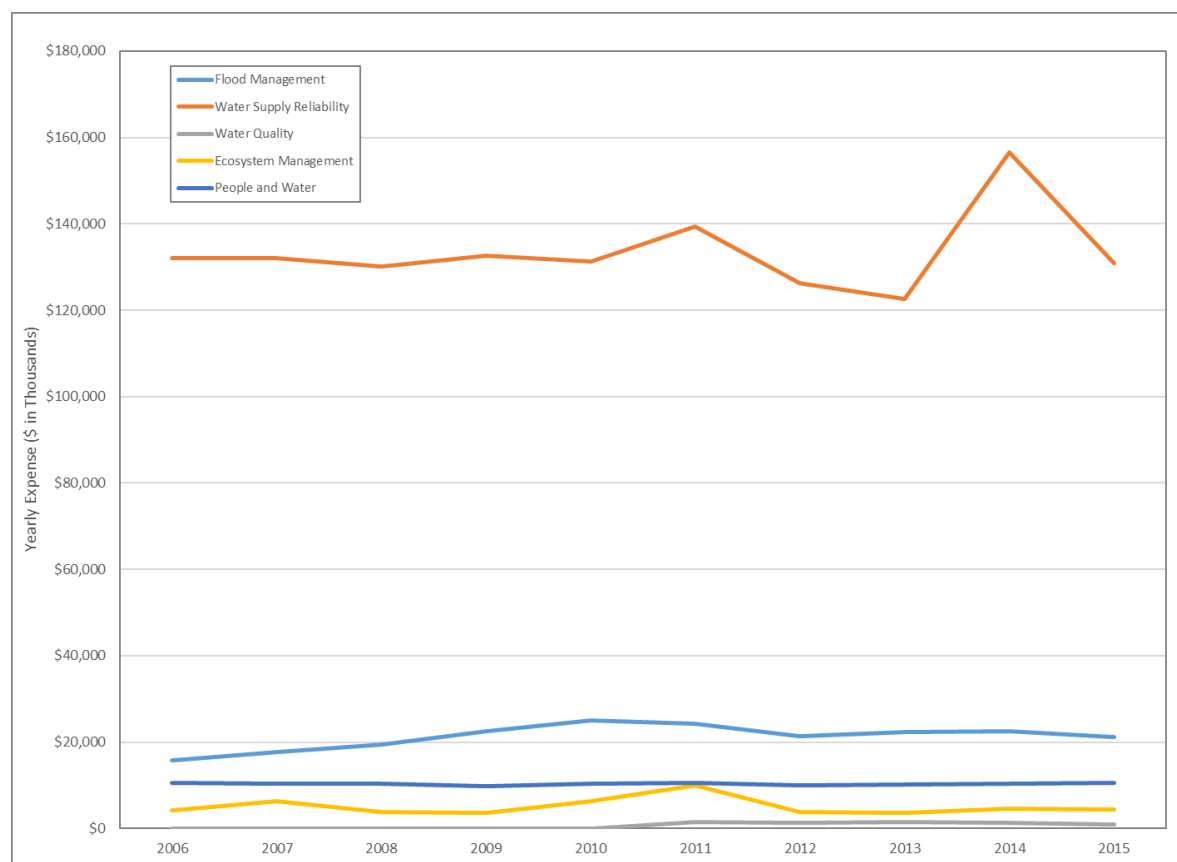


Figure 44 Reclamation Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014

Notable observations about Reclamation ongoing expenditures include:

- Ongoing expenditures for flood management comprised approximately 12 percent of the total ongoing expenditures, averaging more than \$21 million per year. Maximum flood management expenditures of approximately \$25 million occurred in 2010 and was focused on evaluating dam safety at Reclamation facilities.
- Ongoing expenditures for water supply reliability management actions comprised approximately 78 percent of total ongoing expenditures, averaging \$133 million per year. Ongoing expenditures increased from 2006 to 2011 before decreasing in 2012 and 2013. Maximum expenditures of \$157 million occurred in 2014 before expenditures declined in 2015. Ongoing expenditures for water supply reliability supported planning studies, drought response, and facility O&M.
- Ongoing expenditures for water quality management actions comprised less than 0.5 percent of the total ongoing expenditures. In years with expenditures the ongoing expenditures average was approximately more than \$1 per year. Maximum expenditures occurred in 2013 and supported watershed management actions. There were no ongoing water quality expenditures between 2006 and 2010.
- Ongoing expenditures for ecosystem management actions comprised 3 percent of the total ongoing expenditures, averaging more than \$5 million per year. Maximum ongoing expenditures

of approximately \$10 million occurred in 2011 and were used to support fish and wildlife administration, protection, and restoration efforts at Reclamation facilities.

- Ongoing expenditures that support the people and water sector were approximately 5 percent of the total ongoing expenditures, averaging \$10 million per year. Maximum ongoing expenditures occurred in 2011 and supported Native American Affairs and land management at Reclamation facilities.

U.S. Department of Agriculture

The U.S. Department of Agriculture (USDA) is made up of 29 agencies and offices that provide leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on public policy, the best available science, and effective management. Under the USDA, NRCS has very specific responsibilities related to resource conservation. As such, water resources management expenditures for NRCS have been separated from USDA expenditures and are discussed separately in this document.

USDA's vision is to provide economic opportunity through innovation, help rural areas to thrive; promote agriculture production that better nourishes and helps feed persons throughout the world; and preserve U. S. natural resources through conservation, restored forests, improved watersheds, and healthy private working lands. USDA's mission areas include: farm and foreign agricultural services; food, nutrition and consumer services; food safety; marketing and regulatory programs; natural resources and environment; and research, education and economics (USDA, 2017b). Table 52 shows the USDA funding programs.

Table 52 USDA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Agricultural and Rural Economic Research	ERS provides economic and other social science information and analysis for public and private decisions on agriculture, food, natural resources, and rural areas. ERS provides information used by the general public and to help the executive and legislative branches develop, administer, and evaluate agricultural and rural policies and programs (CFDA, 2017z).	2012
Agricultural Research and Basic and Applied Research	National Institute of Food and Agriculture (NIFA) is the USDA's extramural research agency that provides grants for fundamental and applied research in areas of agriculture and food-related sciences with high potential to address key challenge areas. NIFA supports programs that provide foundational knowledge as well as programs that address critical issues facing the long-term viability of agriculture. NIFA funds applied research in the high-priority areas of: Food Security, Climate Variability and Change, Water Sustainable Bioenergy, Childhood Obesity Prevention, and Food Safety (CFDA, 2017aa).	1985
Agricultural Statistics Reports	Agricultural Statistics Reports formulate, develop, and administer programs for collecting and publishing statistics related to agriculture, resources, and rural communities. (CFDA, 2017ab).	1946
Agricultural Water Enhancement Program	The Agricultural Water Enhancement Program (AWEP) was a voluntary conservation initiative that provided financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land to conserve surface and ground water and improve water quality (USDA, 2017c).	2008
Agriculture and	The Agriculture and Food Research Initiative (AFRI) is the nation's	2014

Table 52 USDA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Food Research Initiative (AFRI)	leading competitive grants program for agricultural sciences. The National Institute of Food and Agriculture (NIFA) awards AFRI research, education, and extension grants to combat childhood obesity, improve rural economies, increase food production, create new sources of energy, mitigate the impacts of climate variability, address water availability issues, ensure food safety and security, and train the next generation of agricultural workforce (USDA, 2017d).	
Alfalfa and Forage Research Program	The Alfalfa and Forage Research Program (AFRP) supports the development of improved alfalfa forage and seed production systems (USDA, 2017e).	2008
Collaborative Forest Restoration	<p>The Collaborative Forest Landscape Restoration Program provides funding to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes. The program also provides funding to (USDA, 2017f):</p> <ul style="list-style-type: none"> • Encourage ecological, economic, and social sustainability • Leverage local resources with national and private resources • Facilitate the reduction of wildfire management costs, including through reestablishing natural fire regimes and reducing the risk of uncharacteristic wildfire • Demonstrate the degree to which various ecological restoration techniques achieve ecological and watershed health objectives • Encourage utilization of forest restoration by-products to offset treatment costs, to benefit local rural economies, to and improve forest health. 	
Conservation Reserve Program	The Conservation Reserve Program (CRP) is a land conservation program administered by the Farm Service Agency (FSA). In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat (USDA, 2017g).	1985
Cooperative Extension Service	Cooperative Extension Service offices are conveniently located in courthouses, post offices, or other local government buildings to improve the quality of people's lives by providing research-based knowledge to strengthen the social, economic and environmental well-being of families, communities and agriculture enterprises. Extension experts focus on, among other subjects, food safety and quality, plight of young children, revitalizing rural America, sustainable agriculture, and waste management (USDA, 2017h; USDA, 2017i).	1914
Cooperative Forestry Assistance	This program is designed to assist nonfederal forest and other rural lands in the advancement of forest resources management; the encouragement of the production of timber; the control of insects and diseases affecting trees and forests; the control of rural fires; the efficient utilization of wood and wood residues, including the recycling of wood fiber; the improvement and maintenance of fish and wildlife habitat; and the planning and conduct of urban and community forestry programs (USDA, 2017j).	1978
Emergency	This program helps eligible communities prepare, or recover from, an	1961

Table 52 USDA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Community Water Assistance Grants	emergency that threatens the availability of safe, reliable drinking water (USDA, 2017k).	
Emergency Watershed Protection Program	The USDA's Natural Resources Conservation Service (NRCS) administers the Emergency Watershed Protection (EWP) Program, which responds to emergencies created by natural disasters. It is not necessary for a national emergency to be declared for an area to be eligible for assistance (USDA, 2017k). The program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences (CFDA, 2017ac; USDA, 2017l).	2009
Environmental Quality Incentives Program	The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. EQIP may also help producers meet Federal, State, Tribal, and local environmental regulations (USDA, 2017m).	2009
Farm and Ranch Lands Protection Program	The Farm and Ranch Lands Protection Program (FRPP) provided matching funds to help purchase development rights to keep productive farm and ranchland in agricultural uses (USDA, 2017n).	2009
Forest Health Protection	The Forest Health Protection funds accounts protects non-Federal forest and tree resources from damaging forest insects, disease causing agents, and invasive plants; develop/improve forest health protection technologies; and monitor the health of U.S. forests (CFDA, 2017ad).	1978
Forestry Research	Forestry Research supports fundamental research activities of the U.S. Forest Service by awarding grants to nonprofit organizations, institutions of higher education, and organizations engaged in renewable resources research (CFDA, 2017ae).	1978
Fund for Financing Water and Wastewater Projects	Water and Wastewater grant fund provides grants to private, nonprofit organizations to establish a revolving loan fund to make small, short term loans for pre-development or small capital water or waste disposal project (CFDA, 2017af).	1961
Agricultural Research and Competitive Research Grants	Agricultural Research and Competitive Research Grants supports the research, education, and provides extension grants that address the key problems of national, regional, and multistate importance in sustaining all components of agriculture (e.g., farming, ranching, forestry, aquaculture, rural communities, human nutrition and obesity, food and fiber processing) (CFDA, 2017ag).	2014
Agricultural Research Special Research Grants	Agricultural Research Special Research Grants supports research, facilitation or expansion of promising breakthroughs in areas of the food and agricultural sciences and to facilitate or expand on-going State-Federal food and agricultural research programs (CFDA, 2017ah).	1965
Grassland Reserve Program	The Grassland Reserve Program (GRP) was a voluntary conservation program that emphasized support for working grazing operations, enhancement of plant and animal biodiversity, and protection of grassland under threat of conversion to other uses (USDA, 2017o).	2009
Ground and Surface Water Conservation and	The Ground and Surface Water Conservation (GSWC) portion of the Environmental Quality Incentives Program (EQIP) is a voluntary program that provides assistance to farmers to conserve ground and surface water	2002

Table 52 USDA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Environmental Quality Incentives Program	in their agricultural operations. Activities may include improving irrigation systems, enhancing irrigation efficiencies, converting to the production of less water intensive agricultural commodities, converting to dryland farming, improving the storage of water through such measures as water banking and groundwater recharge, and mitigating the effects of drought. Activities must result in a net savings of groundwater or surface water resources in the agricultural operation of the producer (NRCS, 2005).	
Hispanic-Serving Institutions Education Grants Program	The Hispanic-Serving Institutions Education Grants Program is intended to promote and strengthen the ability of Hispanic-Serving Institutions to carry out higher education programs in the food and agricultural sciences. Programs aim to attract outstanding students and produce graduates capable of enhancing the U.S. food and agricultural scientific and professional work force (USDA, 2017p).	2011
Household Water Well System Grant Program	The Household Water Well System Grant Program supports qualified nonprofits and tribes by providing a loan fund to increase access to clean, reliable water for households in eligible rural areas (USDA, 2017q).	1961
Integrated Programs	Integrated Programs provide support for integrated research, education, and extension activities. Integrated, multi-functional projects are particularly effective in addressing important agricultural issues through the conduct of problem-focused research that is combined with education and extension of knowledge to those in need of solutions. These activities address critical national, regional, and multi-state agricultural issues, priorities, or problems. Integrated Programs hold the greatest potential to produce and disseminate knowledge and technology directly to end users while providing for educational opportunities to assure agricultural expertise in future generations (CFDA, 2017ai).	1998
International Forestry Programs	International Forestry Programs extends U.S. Forest Service efforts to improve forest policies and practices internationally, address climate change, conserve and protect critical global forest environments and resources, and improve the lives of forest-dependent peoples by awarding grants to and entering into cooperative agreements with nonprofit organizations, multilateral organizations, and other individuals, organizations, institutions, and governments engaged in forest conservation and management (USDA, 2017k).	1990
International Science and Education Grants	The International Science and Education Program provides grants supporting research, extension, and teaching activities that enhanced the capabilities of American colleges and universities to conduct international collaborative research, extension and teaching (USDA, 2017r).	2005
Lake Tahoe Erosion Control Grant Program	Lake Tahoe Erosion Control Grant Program funds are available to the governing bodies of political subdivisions (local government jurisdictions) within the Lake Tahoe Basin for planning, designing, implementing, and monitoring urban erosion control water quality treatment projects. The funds will be allocated on a competitive basis (U.S. Forest Service, 2017a).	2015
Outreach and Assistance for Socially Disadvantaged Farmers and Ranchers	The primary purpose of the Outreach and Assistance for Socially Disadvantaged Farmers and Ranchers Program is to enhance the coordination of outreach, technical assistance, and education efforts, to reach socially disadvantaged and veteran farmers, ranchers and forest landowners in a linguistically appropriate manner and to improve their participation in the full range of USDA programs (USDA, 2017s).	2014
Special Evaluation	The Special Evaluation Assistance for Rural Communities and	1961

Table 52 USDA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Assistance for Rural Communities and Households Program (SEARCH)	Households Program (SEARCH) helps very small, financially distressed rural communities with predevelopment feasibility studies, design and technical assistance on proposed water and waste disposal projects (USDA, 2017t).	
ARRA Capital Improvement and Maintenance	The Capital Improvement and Maintenance program was created as part of the ARRA for priority road, bridge and trail maintenance and decommissioning, including related watershed restoration and ecosystem enhancement projects; facilities improvement, maintenance and renovation; and remediation of abandoned mine sites (USDA, 2017u).	2009
Resource Conservation and Development	Resource Conservation and Development (RC&D) is a unique program led by local volunteer councils that helps people protect and develop their economic, natural, and social resources in ways that improve their area's economy, environment, and quality of life (USDA, 2017v).	1962
Rural Development Forestry and Communities	Rural Development Forestry and Communities program helps rural areas analyze and assess forest resource opportunities, maximize local economic potential through market development and expansion, and diversify communities' economic base (USDA, 2017w).	2009
Schools and Roads - Grants to Counties	The Schools and Roads – Grants to Counties program provides funding for the benefit of public schools and public roads in which National Grassland or Land Utilization Projects are situated (USDA, 2017x).	1908
Schools and Roads - Grants to States	The Schools and Roads – Grants to States program provides funding to benefit schools and roads in the areas where National Forest land is situated (USDA, 2017y).	2008
Small Business Innovation Research	The Small Business Innovation Research (SBIR) program offers competitively awarded grants to qualified small businesses to support high quality research related to important scientific problems and opportunities in agriculture that could lead to significant public benefits. The program stimulates technological innovations in the private sector and strengthens the role of federal research and development in support of small businesses. The SBIR program also fosters and encourages participation by women-owned and socially or economically disadvantaged small businesses (USDA, 2017z).	1982
Soil and Water Conservation Program	The Soil and Water Conservation Program provides conservation technical assistance to private landowners, conservation districts, tribes, and other organizations through a national network of locally-respected, technically-skilled, professional conservationists and assists them in conserving, improving and sustaining our natural resources and environment (CFDA, 2017ak).	1936
Specialty Crop Research Initiative (SCRI)	The purpose of the SCRI program is to address the critical needs of the specialty crop industry by awarding grants to support research and extension that address key challenges of national, regional, and multi-state importance in sustaining all components of food and agriculture, including conventional and organic food production systems (USDA, 2017aa).	2008
Community Facilities Technical Assistance and Training Grants	Community Facilities Technical Assistance and Training Grants Program provides grants to public bodies and private nonprofit corporations, (such as states, counties, cities, townships, and incorporated towns and villages, boroughs, authorities, districts, and Indian tribes on Federal and State reservations) for technical assistance and/or training with respect to essential community facilities programs (USDA, 2017ab).	2014

Table 52 USDA Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Urban and Community Forestry Program	The Urban and Community Forestry Program provides technical, financial, educational, and research services to states, cities, and nonprofit groups so they can plant, protect, maintain, and utilize wood from community trees and forests to maximize environmental, social and economic benefits (U.S. Forest Service, 2017b).	1978
Water and Waste Disposal Loans and Grants	The Water and Waste Disposal Loans and Grants program funds water and waste disposal facilities and services to low income rural communities whose residents face significant health risks (USDA, 2017ac).	1961
Water and Waste Disposal Systems for Rural Communities	The Water and Waste Disposal Systems for Rural Communities program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage to households and businesses in eligible rural areas (USDA, 2017ad).	1961
Watershed Protection and Flood Prevention	The Watershed and Flood Prevention Operations Program provides funding to protect and restore watersheds that are up to 250,000 acres in size. Typically, the program is used to prevent erosion, floodwater and sediment damage, as well as further conservation development, and the best use of and disposal of water (USDA, 2017ad).	1944
Watershed Rehabilitation Program	The Watershed Rehabilitation Program provides funding for rehabilitating aging dams that are reaching the end of their 50-year design lives (USDA, 2017ae).	1948
Watershed Restoration and Enhancement Agreement Authority	The Watershed Restoration and Enhancement Agreement Authority allows for the U.S. Forest Service to enter into domestic cooperative agreements with willing participants for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land and for the reduction of risk from natural disaster where public safety is threatened that benefit these resources within the watershed (USDA, 2017af).	1998
Wetlands Reserve Program	The Wetlands Reserve Program (WRP) is a voluntary program that offers landowners the opportunity to protect, restore, and enhance wetlands. The goal of the program is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program (USDA, 2017ag).	2009
Wildlife Services	The Wildlife Services program provides Federal leadership and expertise to resolve wildlife conflicts to allow people and wildlife to coexist. Funding from the program is used to provide technical assistance and direct management operations in response to requests for assistance (USDA, 2017ah).	1985

Historical USDA Expenditures

USDA historical expenditures in California primarily supported the water quality and water supply reliability sectors, especially in providing water and waste treatment assistance in rural areas. Between 2006 and 2015, total USDA expenditures averaged more than \$31 million per year. USDA expenditures averaged more than \$21 million for capital expenditures and approximately \$10 million for ongoing expenditures. Table 53 shows capital, ongoing, and total USDA expenditures during this period.

Overall, USDA expenditures in water resources management have fluctuated, with an increase in funding occurring in 2010. Capital expenditures vary by year before reaching a peak of more than \$39 million in

2010. Ongoing expenditures steadily increased between 2006 and 2009, before reaching a peak of \$26 million in 2010, and then declined over time to approximately \$3 million in 2015. Figure 45 shows USDA's capital and ongoing expenditures within California between 2006 and 2015.

Table 53 USDA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$13,396	\$1,333	\$14,729
2007	\$23,869	\$8,062	\$31,931
2008	\$21,296	\$17,479	\$38,775
2009	\$31,061	\$23,559	\$54,620
2010	\$39,381	\$25,655	\$65,036
2011	\$17,469	\$6,531	\$24,000
2012	\$9,901	\$5,457	\$15,358
2013	\$12,205	\$4,717	\$16,922
2014	\$22,064	\$3,977	\$26,041
2015	\$20,141	\$2,935	\$23,076
Average	\$21,078	\$9,971	\$31,049

Source: Library of Congress, 2017b and 2017c

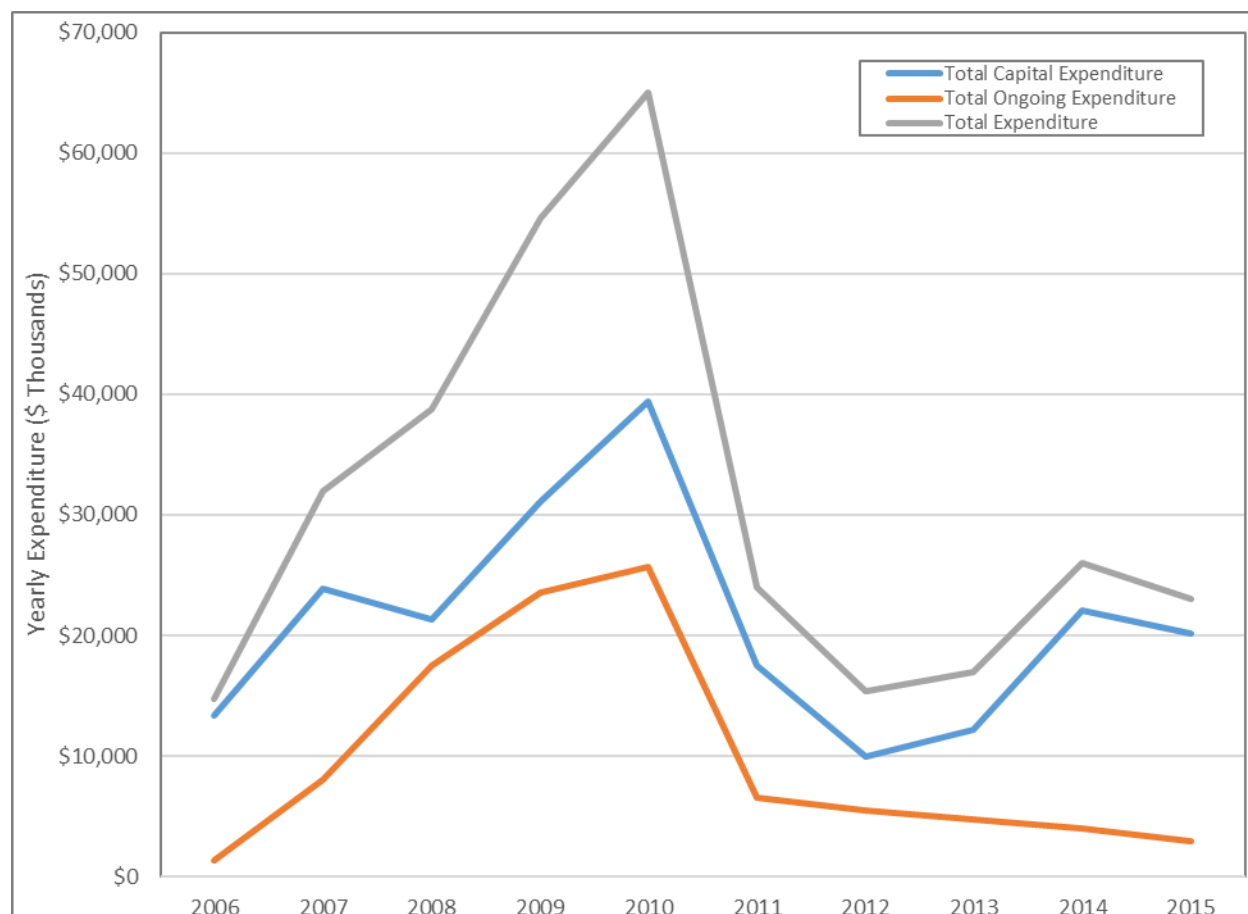


Figure 45 USDA Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: Library of Congress, 2017b and 2017c

USDA Capital Expenditures

Between 2006 and 2015, capital expenditures averaged more than \$21 million per year. Maximum capital expenditures were approximately \$40 million in 2010 due to the ARRA, and the minimum capital expenditures were approximately \$10 million in 2012. The majority of USDA capital expenditures funded water quality projects, accounting for more than 40 percent of all capital actions. Table 54 and Figure 46 show USDA capital expenditures between 2006 and 2015, separated by water sector.

Table 54 USDA Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$13,396	\$0	\$0	\$13,396
2007	\$0	\$149	\$8,062	\$11,246	\$4,413	\$23,870
2008	\$0	\$1,114	\$6,193	\$7,618	\$6,371	\$21,296
2009	\$0	\$5,111	\$8,563	\$11,073	\$6,313	\$31,060
2010	\$15	\$5,174	\$13,738	\$6,138	\$14,316	\$39,381
2011	\$27	\$380	\$6,914	\$3,775	\$6,374	\$17,470
2012	\$175	\$52	\$5,945	\$3,341	\$388	\$9,901
2013	\$0	\$0	\$5,393	\$6,510	\$301	\$12,204
2014	\$10	\$9,878	\$7,879	\$1,189	\$3,108	\$22,064
2015	\$0	\$8,354	\$11,067	\$67	\$654	\$20,142
Average	\$23	\$3,021	\$8,715	\$5,096	\$4,224	\$21,078

Source: Library of Congress, 2017b and 2017c

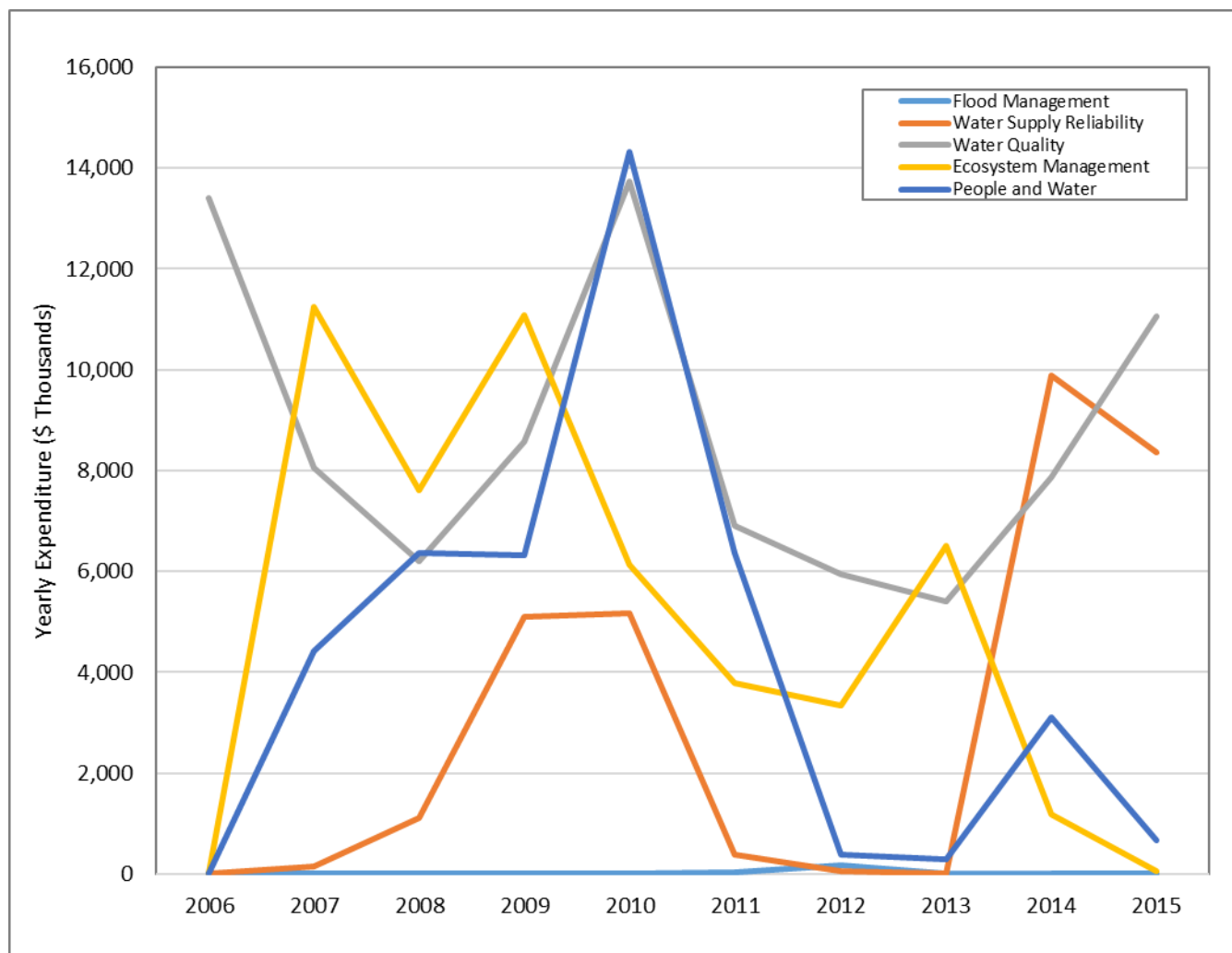


Figure 46 USDA Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: Library of Congress, 2017b and 2017c

Notable observations of USDA capital expenditures include:

- Flood management is not a primary responsibility of USDA, therefore flood management expenditures totaled only 0.1 percent of total capital expenditures, averaging \$23,000 per year. Flood management capital expenditures were only reported in 2010 through 2012 and 2014. During this time, maximum expenditures were in 2012 due to the Griffin Creek culvert project in Del Norte county.
- Water supply expenditures were approximately 15 percent of all capital expenditures, averaging \$3 million per year. Maximum expenditures occurred in 2010, when USDA issued emergency community water assistance grants. In 2006 and 2013, no capital water supply expenditures were reported.
- More than 40 percent of all annual capital expenditures supported water quality management actions, averaging approximately \$9 million per year. Maximum expenditures during the period were in 2010, including domestic water grants totaling more than \$7 million.

- Expenditures for ecosystem management actions accounted for approximately 25 percent of all capital expenditures, averaging \$5 million per year. Maximum expenditures occurred in 2007 with a majority of funding provided to support land management grants totaled more than \$10 million. In 2006, no ecosystem management capital expenditures were reported.
- People and water management actions accounted for 20 percent all capital expenditures, averaging \$4 million per year. Maximum expenditures occurred in 2010 and supported farm and ranch land conservation and protection. People and water expenditures were not reported in 2006.

USDA Ongoing Expenditures

Between 2006 and 2015, ongoing expenditures averaged approximately \$10 million per year. Maximum ongoing expenditures were approximately \$26 million in 2010, with minimum expenditures occurring in 2006 at more than \$1 million. The majority of USDA ongoing expenditures, about 50 percent, funded water quality management actions. Table 55 and Figure 47 show USDA ongoing expenditures between 2006 and 2015, separated by water sector.

Table 55 USDA Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$398	\$595	\$340	\$1,333
2007	\$0	\$0	\$5,976	\$1,405	\$681	\$8,062
2008	\$0	\$715	\$10,842	\$1,374	\$4,548	\$17,479
2009	\$1,011	\$817	\$10,583	\$4,989	\$6,159	\$23,559
2010	\$315	\$0	\$18,142	\$1,905	\$5,292	\$25,654
2011	\$499	\$527	\$1,236	\$770	\$3,499	\$6,531
2012	\$129	\$249	\$100	\$2,621	\$2,358	\$5,457
2013	\$0	\$91	\$1,745	\$1,916	\$966	\$4,718
2014	\$0	\$116	\$678	\$2,269	\$914	\$3,977
2015	\$0	\$875	\$100	\$732	\$1,229	\$2,936
Average	\$195	\$339	\$4,980	\$1,858	\$2,598	\$9,971

Source: Library of Congress, 2017b and 2017c

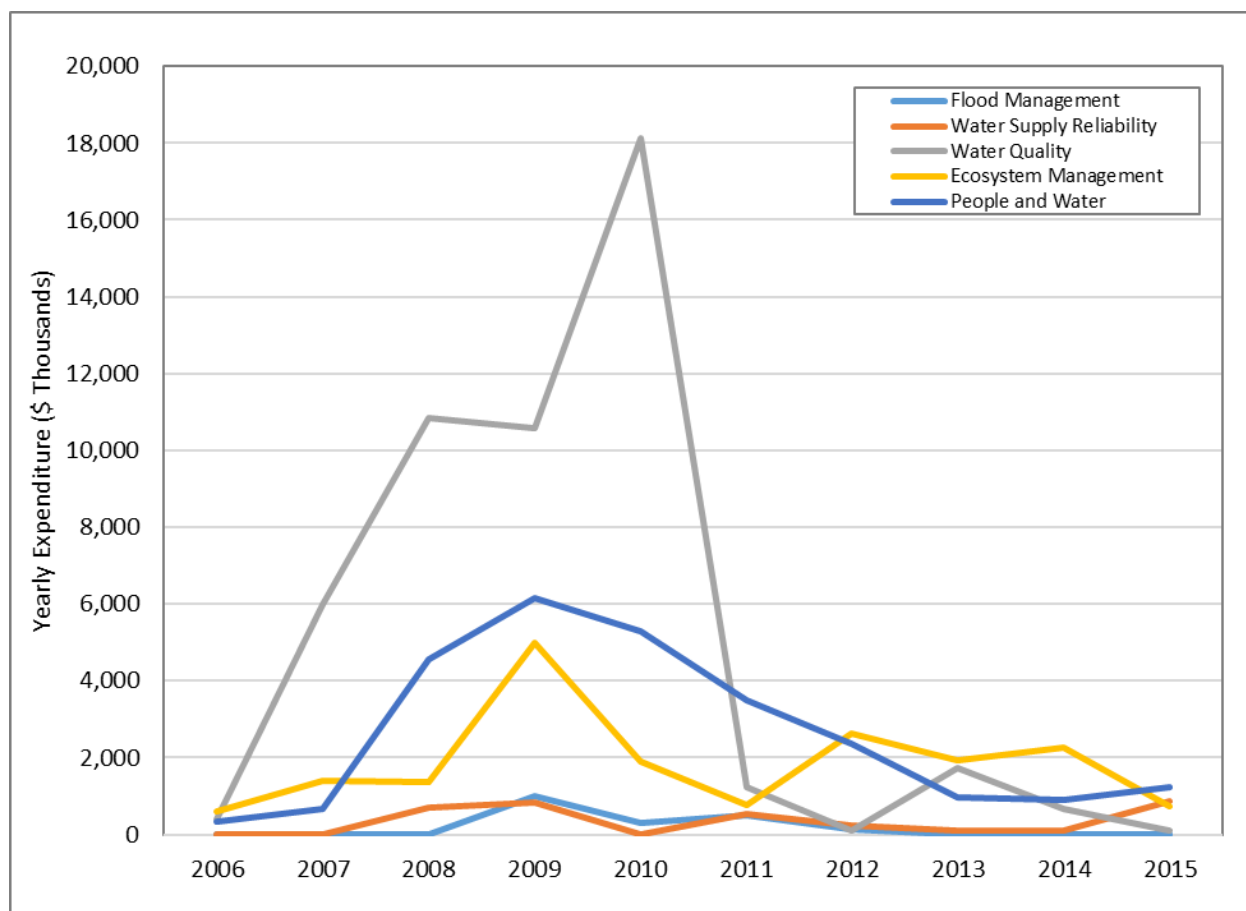


Figure 47 USDA Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: Library of Congress, 2017b and 2017c

Notable observations of USDA ongoing expenditures include:

- Ongoing expenditures for flood management were minimal, approximately two percent of all ongoing expenditures. Ongoing expenditures for flood management were only reported for four years during the period, from 2009 through 2012. When flood management expenditures did occur, the maximum were in 2009, which included studies and monitoring of stormwater runoff.
- Ongoing expenditures for water supply reliability were not reported in 2006, 2007, and 2010. USDA water supply reliability expenditures averaged \$339,000 per year, accounting for approximately 3 percent of ongoing expenditures. Maximum expenditures during the period were in 2015, supporting emergency community water assistance grants, innovative tools for water management, and studies on water use efficiency.
- The majority of USDA ongoing expenditures supported water quality management actions, accounting for 50 percent of all ongoing expenditures, averaging approximately \$5 million per year. Maximum expenditures during the period occurred in 2010, totaling \$18 million and included funding for monitoring and studies on water quality and emergency watershed protection.
- Ongoing expenditures for ecosystem management actions accounted for approximately

20 percent of all ongoing expenditures, averaging approximately \$1.9 million per year. From 2006 through 2015, maximum expenditures were in 2009, totaling more than \$5 million. Management actions in this year included advanced sensing and management tools to optimize water and nitrogen use in tree crops and funding for the CCC.

- People and water ongoing expenditures average more than \$2.6 million per year, accounting for 25 percent of ongoing expenditures. From 2006 through 2015, maximum ongoing expenditures were in 2009 and funded educational activities and to support RCDs.

U.S. Department of Interior, National Park Service

The U.S. National Park Service (NPS) is a bureau of the U.S. Department of the Interior. On August 25, 1916, President Woodrow Wilson signed the act creating the NPS. The mission of the NPS is to preserve unimpaired the natural and cultural resources and values for the enjoyment, education, and inspiration of current and future generations. The NPS coordinates with national and international partners to extend the benefits of natural and cultural resource conservation and outdoor recreation. The NPS manages the 417 parks within the National Park System.

The NPS also helps administer dozens of affiliated sites, including the National Register of Historic Places, National Heritage Areas, National Wild and Scenic Rivers, National Historic Landmarks, and National Trails. Table 56 shows the NPS funds accounts programs and descriptions.

Table 56 NPS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Archeology Program	As one of the principal stewards of America's heritage, the NPS is charged with the preservation of the commemorative, educational, scientific, and traditional cultural values of archeological resources for the benefit and enjoyment of present and future generations. The Service does this through (1) archeological resource stewardship within the national parks, and (2) assistance to partners, including Federal, State, tribal, and local government agencies; individuals; and private organizations outside the national parks (NPS, 2004).	2004
Conservation	NPS conservation and recreation planning professionals partner with community groups, nonprofits, tribes, and state and local governments to design trails and parks, conserve and improve access to rivers, protect special places, and create recreation opportunities (NPS, 2017b).	N/A
Conservation Activities by Youth Service Organizations	<p>The Conservation Activities by Youth Service Organizations program:</p> <ul style="list-style-type: none"> • Utilizes qualified youth or conservation corps to carry out appropriate conservation projects on public lands. • Work cooperatively with the NPS on cultural and natural resource related conservation projects such as trail development and maintenance, historic, cultural, forest and timber management, minor construction work, archaeological conservation, and native plant habitat restoration and rehabilitation. • Promotes and stimulates public purposes such as education, job training, development of responsible citizenship, productive community involvement, and further the understanding and appreciation of natural and cultural resources through the involvement of youth and young adults in care and enhancement of public resources. 	1997

Table 56 NPS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	<ul style="list-style-type: none"> Continues the longstanding efforts of the NPS to provide opportunities for public service, youth employment, minority youth development and training, and participation of young adults in accomplishing conservation-related work. <p>Funding for this program under the ARRA, also had the following objectives (Federal Grants Wire, 2017j):</p> <ul style="list-style-type: none"> To preserve and create jobs and promote economic recovery To assist those most impacted by the recession To provide investments needed to increase economic efficiency by spurring technological advances in science and health To invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits To stabilize State and local government budgets, to minimize and avoid reductions in essential services and counterproductive state and local tax increases. 	
Cooperative Ecosystem System Studies Unit Awards	The Cooperative Ecosystem Studies Units (CESU) network is a nationwide consortium of federal agencies, universities, conservation organizations, and other partners working together to support agency missions and informed public trust resource stewardship (NPS, 2015).	1998
Cooperative Research and Training Programs - Resources of The National Park System	Cooperative Research and Training Programs purpose is to (CFDA, 2017a): <ul style="list-style-type: none"> Develop adequate, coordinated cooperative research, offer training programs and/or develop information products Create, through cooperative agreements, and establish cooperative study units to conduct multidisciplinary research to provide a solid science basis for the management of the National Park System or the larger region of which parks are a part as necessary to form the basis of sound park management. 	1999
Cultural Resources Management	The Cultural Resources, Partnerships, and Science Directorate's archeologists, architects, curators, historians, and other cultural resource professionals assist America's national parks to preserve, protect, and share the history of this land and its people (NPS, 2017c).	1996
Education and Training	The National Park Service offers tools for teachers of all levels and students of all ages to teach and learn about history, historic preservation, and American heritage and culture (NPS, 2017d).	N/A
Grants to Indian Tribes Alaska Natives and Native Hawaiian Organizations for Historic Preservation (For NPS Owned Property)	The National Park Service (NPS) Tribal Preservation Program assists Indian tribes in preserving their historic properties and cultural traditions through the designation of Tribal Historic Preservation Offices (THPO) and through annual grant funding programs (NPS, 2017e).	1990
Historic Preservation Fund Grants-In-Aid	Historic Preservation Fund Grants provide matching grants to States for the identification, evaluation, and protection of historic properties by such means as survey, planning technical assistance, acquisition, development, and certain Federal tax incentives available for historic properties; to provide matching grants to States to expand the National Register of Historic Places, (the Nation's listing of districts, sites,	1996

Table 56 NPS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	buildings, structures, and objects significant in American history, architecture, archeology, engineering and culture at the National, State and local levels) to assist Federal, State, and Local Government agencies, nonprofit organizations and private individuals in carrying out historic preservation activities; and to provide grants to Indian Tribes and Alaskan Native Corporations to preserve their culture (CFDA, 2017am).	
National Center for Preservation Technology & Training Program	<p>The National Center for Preservation Technology & Training Program purpose is to (CFDA, 2017an):</p> <ul style="list-style-type: none"> • Develop and distributes preservation technologies and conservation skills for the identification, evaluation, conservation, and interpretation of prehistoric and historic resources • Develop and facilitate training for Federal, State and local resource preservation professionals, cultural resource managers, maintenance personnel, and others working in the preservation field • Apply preservation technology benefits from ongoing research by other agencies and institutions; to facilitate the transfer of preservation technology among Federal agencies, State and local governments, universities, international organizations, the private sector • Cooperate with related international organizations for the benefit of cultural resource conservation in the United States and worldwide. 	National Center for Preservation Technology & Training Program
National Fish and Wildlife Foundation (NFWF)	NFWF directs public conservation dollars to the most pressing environmental needs and matches those investments with private funds. NFWF's method is simple and effective: to work with a full complement of individuals, foundations, government agencies, non-profits, and corporations to identify and fund targeted conservation challenges throughout the nation where a focused investment is likely to result in a conservation success (CFDA, 2017ao).	1984
National Natural Landmarks Program	The National Natural Landmarks Program recognizes and encourages the conservation of sites that contain outstanding biological and geological resources. Sites are designated by the Secretary of the Interior for their condition, illustrative character, rarity, diversity, and value to science and education. The National Park Service administers the program and works cooperatively with landowners, managers and partners to promote conservation and appreciation of our nation's natural heritage (NPS, 2017f).	1962
National Park Service Conservation Protection Outreach and Education	The National Park Service Conservation Protection Outreach and Education programs purpose is to support projects complementary to National Park Service program efforts in resource conservation and protection, historical preservation and environmental sustainability. These projects may include but are not limited to research, education, outdoor recreation and community outreach and safety. The objectives include promoting the use of culturally diverse resources and environmental advocacy in collaboration and cooperation with state, tribal, and local governments, nonprofit organizations and educational institutions (CFDA, 2017ap).	2012
National Trails System Projects	The purpose of National Trails System Projects is to preserve, protect, and develop the components of the National Trails System, with a strong	1968

Table 56 NPS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
	emphasis on volunteer involvement, through cooperative agreements to operate, develop, and maintain any portion of such a trail either within or outside a federally administered area. Projects can provide financial assistance to encourage participation in the acquisition, protection, operation, development, or maintenance of such trails (CFDA, 2017aq).	
Native American Graves Protection and Repatriation Act	The Native American Graves Protection and Repatriation Act purpose is to provide grants to museums to assist in the consultation on and documentation of Native American human remains and cultural items; to provide grants to Indian tribes and Native Hawaiian organizations, as defined in the Act, to assist in identifying human remains and cultural items and to provide grants to museums, Indian tribes and Native Hawaiian organizations to assist in the repatriation of human remains and cultural items (CFDA, 2017ar).	1990
Natural Resource Stewardship	The Natural Resource Stewardship program is the principle means through which the NPS evaluates and improves the health of watersheds, landscapes, and marine and coastal resources, sustains biological communities on the lands and waters in parks, and actively endeavors to improve the resiliency of these natural resources and adapt them to the effects of climate change (CFDA, 2017as).	2008
Natural Resources	The Natural Resource Stewardship and Science Directorate (NRSS) provides scientific, technical, and administrative support to national parks for the management of natural resources. NRSS develops, utilizes, and distributes the tools of natural and social science to help the NPS fulfill its core mission: the protection of park resources and values. NRSS provides leadership and expertise to ensure understanding, awareness, representation, and stewardship of the natural resources of the NPS so that they remain unimpaired for future generations (CFDA, 2017as).	2008
Outdoor Recreation	Outdoor recreation activities are funded through the Land and Water Conservation Fund (LWCF). LWCF provides grants to states and localities for acquisition, development and planning of outdoor recreation opportunities in the United States. Grants have supported purchase and protection of 3 million acres of recreation lands and over 29,000 projects to develop basic recreation facilities in every State and territory of the nation (NPS, 2017g).	1965
Outdoor Recreation Acquisition Development and Planning	The Outdoor Recreation Acquisition Development and Planning program purpose is to provide financial assistance to the States and their political subdivisions for the preparation of Statewide Comprehensive Outdoor Recreation Plans (SCORPs) and acquisition and development of outdoor recreation areas and facilities for the general public, to meet current and future needs (CFDA, 2017at).	1965
Preservation of Japanese American Confinement Sites	The purpose of this program is to provide for the preservation and interpretation of historic confinement sites where Japanese Americans were detained during World War II. The program was established to encourage projects that identify, research, evaluate, interpret, protect, restore, repair, and acquire historic confinement sites in order that present and future generations may learn and gain inspiration from these sites and that these sites will demonstrate the Nation's commitment to equal justice under the law (United States Government Publishing Office, 2006)	2006
Redwood National Park Cooperative	The purpose of this program is to (CFDA, 2017au): <ul style="list-style-type: none"> • Exchange goods and services to be used for cooperative 	1998

Table 56 NPS Programs that Support Water Resources Management

Program Name	Description of Funds Account	Date Fund Established
Management with the State of California	<p>management of lands within Headwaters Forest, Redwood National Park, and proximate State lands</p> <ul style="list-style-type: none"> Develop joint operating procedures and standards to ensure effective and efficient accomplishment of park activities, including but not limited to: visitor services, resource protection, public information, interpretation and publications, resource management, maintenance, administration, design and construction, planning, signing, and the development of policies 	
Science and Research (including Research/Issues and Science Studies)	<p>The Natural Resource Challenge was created in 1999 to improve NPS knowledge of natural resources across the National Park System. The goal of the Challenge was to understand, measure, and improve the health of park ecosystems. It addressed three main challenges (NPS, 2016):</p> <ul style="list-style-type: none"> Protecting native species and their habitats, Providing leadership for a healthy environment, and Connecting parks to protected areas and parks to people. 	1999
Rivers, Trails, and Conservation Assistance	<p>The Rivers, Trails and Conservation Assistance Program (RTCA) implements the natural resource conservation and outdoor recreation mission of the NPS in communities across America. RTCA will help create local, regional and state networks of parks, rivers, trails, greenways and open spaces by collaborating with community partners and National Park areas in every state (CFDA, 2017av).</p>	1968
Safety/Security	<p>The branch of the NPS responsible for Visitor and Resource Protection (VRP) works to protect the safety and health of its visitors, partners, and staff as well as natural and cultural resources (NPS, 2017h).</p>	N/A
Save America's Treasures	<p>The purpose of this program is to provide matching grants for preservation or conservation work on nationally significant intellectual and cultural artifacts and nationally significant historic structures and sites. Intellectual and cultural artifacts include artifacts, collections, documents, sculpture and works of art (CFDA, 2017aw).</p>	2009
Youth Programs	<p>NPS offers programs and opportunities for youth ages 35 and under. Programs include internships and youth corps (NPS, 2017i).</p>	N/A

Historical NPS Expenditures

NPS expenditures in California are primarily focused on the ecosystem management and people and water sectors. From 2006 to 2015, expenditures have ranged from zero dollars in 2011 to a peak of approximately \$19 million in 2014, averaging more than \$5 million per year.

Table 57 shows capital, ongoing, and total NPS expenditures between 2006 and 2015. NPS funding supported land conservation, recreation, trail system improvements, education programs, and support for resource stewardship. Figure 48 shows total NPS capital and ongoing expenditures in California between 2006 to 2015.

Table 57 NPS Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$4,571	\$1,343	\$5,914
2007	\$112	\$25	\$137
2008	\$73	\$263	\$336
2009	\$1,364	\$1,351	\$2,715
2010	\$2,861	\$1,879	\$4,740
2011	\$0	\$0	\$0
2012	\$0	\$50	\$50
2013	\$6,108	\$4,855	\$10,963
2014	\$12,412	\$6,548	\$18,960
2015	\$4,583	\$4,410	\$8,993
Average	\$3,208	\$2,072	\$5,281

Source: Library of Congress, 2017f

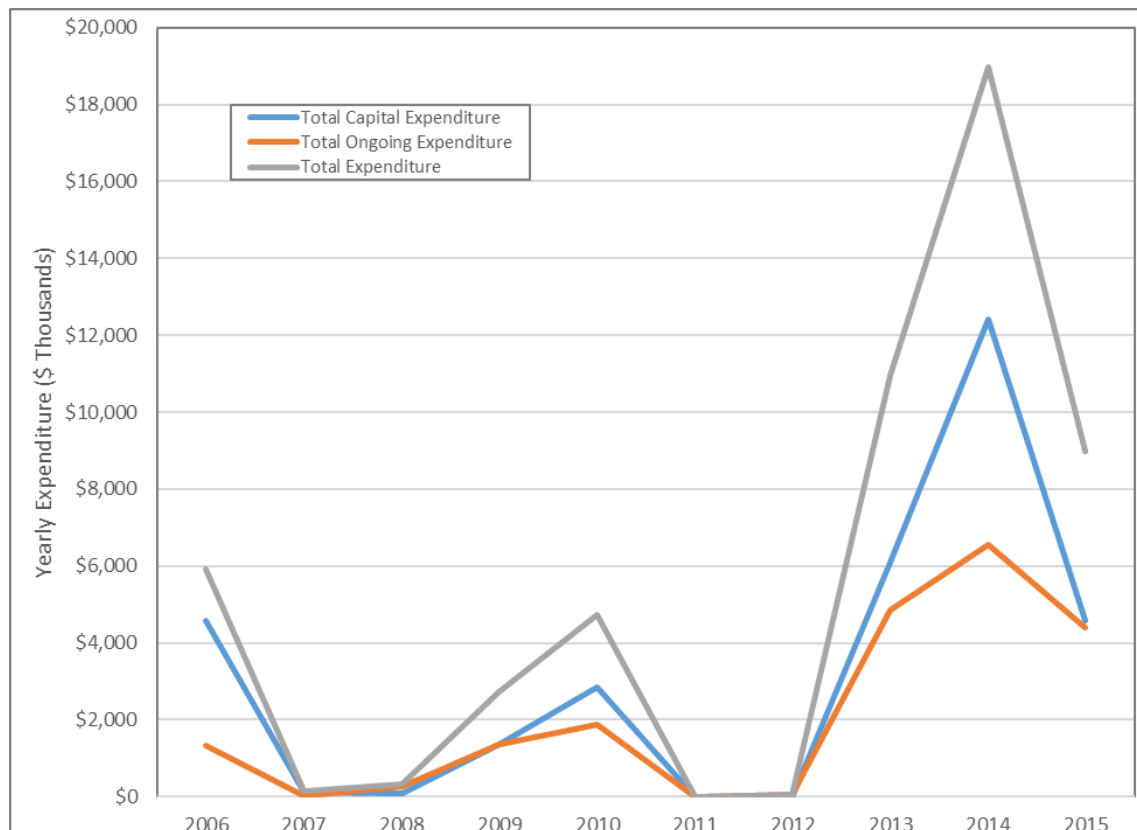


Figure 48 NPS Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: Library of Congress, 2017f

NPS Capital Expenditures

NPS has a strong responsibility for recreational access and environmental protection. As such, expenditures predominately funded capital management actions that supported people and water (more than 70 percent of capital actions) and ecosystem management sectors (more than 25 percent of capital actions). Flood management actions also received a minimal amount of funding. Capital expenditures averaged approximately \$3.2 million per year, with maximum capital expenditures totaling approximately \$12 million occurring in 2014. Table 58 and Figure 49 show capital expenditures between 2006 and 2015, by water sector.

Table 58 NPS Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$263	\$0	\$0	\$1,075	\$3,233	\$4,571
2007	\$0	\$0	\$0	\$81	\$31	\$112
2008	\$0	\$0	\$0	\$20	\$53	\$73
2009	\$0	\$0	\$0	\$287	\$1,077	\$1,364
2010	\$0	\$0	\$0	\$1,441	\$1,420	\$2,861
2011	\$0	\$0	\$0	\$0	\$0	\$0
2012	\$0	\$0	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$2,227	\$3,881	\$6,108
2014	\$75	\$0	\$0	\$2,212	\$10,125	\$12,412
2015	\$0	\$0	\$0	\$1,178	\$3,405	\$4,583
Average	\$34	\$0	\$0	\$852	\$2,323	\$3,208

Source: Library of Congress, 2017f

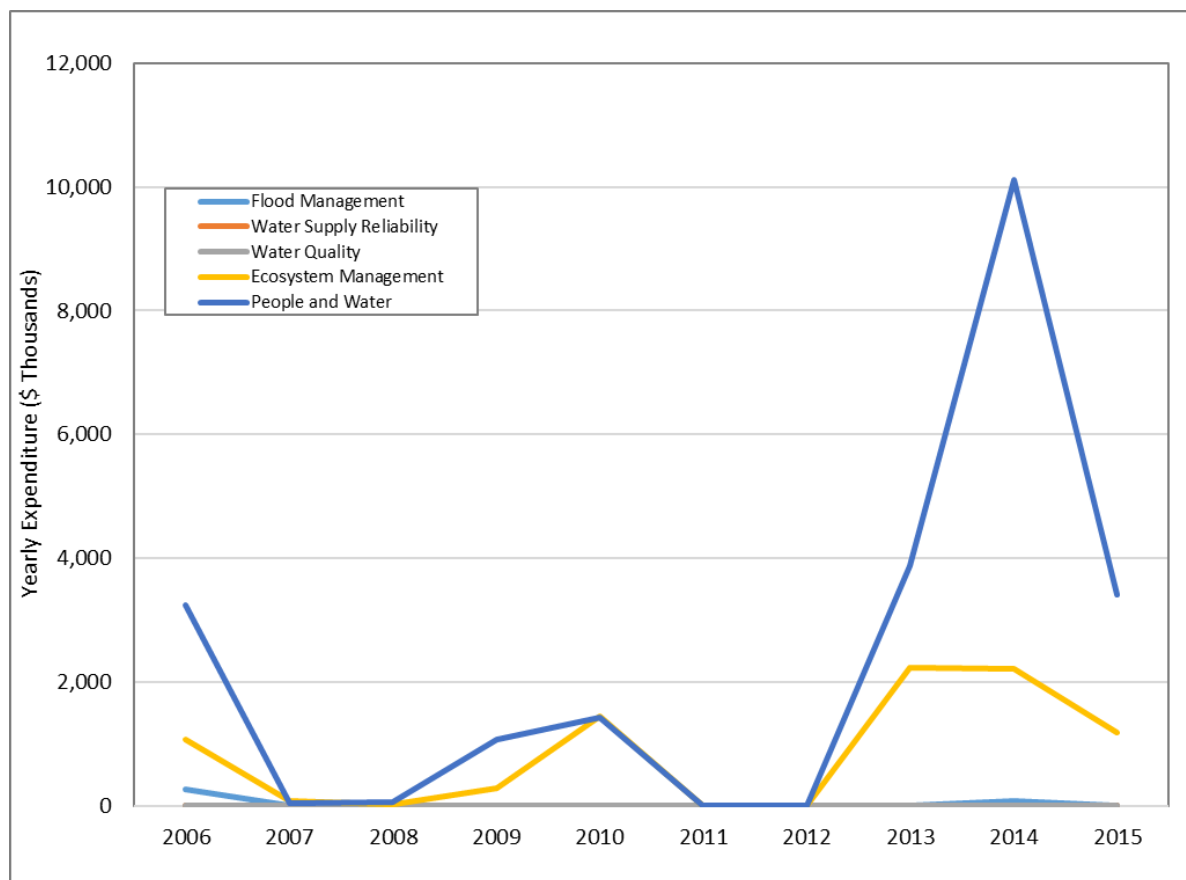


Figure 49 NPS Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015

Source: Library of Congress, 2017f

Notable observations of NPS capital expenditures include:

- Flood management capital expenditures were minimal compared to the ecosystem management and people and water sectors. Expenditures were only reported in 2006 and 2014. Maximum flood management capital expenditures were in 2006, and included a culvert replacement effort in Redwood National and State Parks.
- There were no capital expenditures for water supply reliability and water quality management actions, as NPS does not have responsibility for these water sectors.
- Ecosystem management expenditures averaged more than \$850,000 per year. Maximum expenditures were reported in 2013, which included the implementation of management actions, totaling with \$2.2 million and supported resource stewardship efforts, habitat restoration, fish passage, and debris removal efforts.
- NPS capital expenditures predominately funded the people and water sector, averaging more than \$2 million per year. Maximum expenditures occurred in 2014, including the implementation of management actions, totaling \$10 million for conservation, protection of cultural resources, public outreach, and trail improvements.

NPS Ongoing Expenditures

A majority of NPS ongoing expenditures were directed towards the people and water and ecosystem management sectors. More than 50 percent of expenditures supported people and water, while more than 45 percent supported ecosystem management. A small portion of ongoing expenditures were for water supply reliability and water quality management actions. Maximum ongoing expenditures were approximately \$6.5 million in 2014. In 2011, no ongoing expenditures were reported. Table 59 and Figure 50 show NPS ongoing expenditures, by water sector.

Table 59 NPS Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$0	\$0	\$0	\$630	\$713	\$1,343
2007	\$0	\$0	\$0	\$25	\$0	\$25
2008	\$0	\$0	\$0	\$224	\$39	\$263
2009	\$0	\$0	\$0	\$839	\$512	\$1,351
2010	\$0	\$0	\$0	\$255	\$1,624	\$1,879
2011	\$0	\$0	\$0	\$0	\$0	\$0
2012	\$0	\$0	\$0	\$0	\$50	\$50
2013	\$0	\$23	\$0	\$2,561	\$2,272	\$4,856
2014	\$0	\$11	\$0	\$2,907	\$3,629	\$6,547
2015	\$0	\$0	\$12	\$2,321	\$2,077	\$4,410
Average	\$0	\$3	\$1	\$976	\$1,092	\$2,072

Source: Library of Congress, 2017f

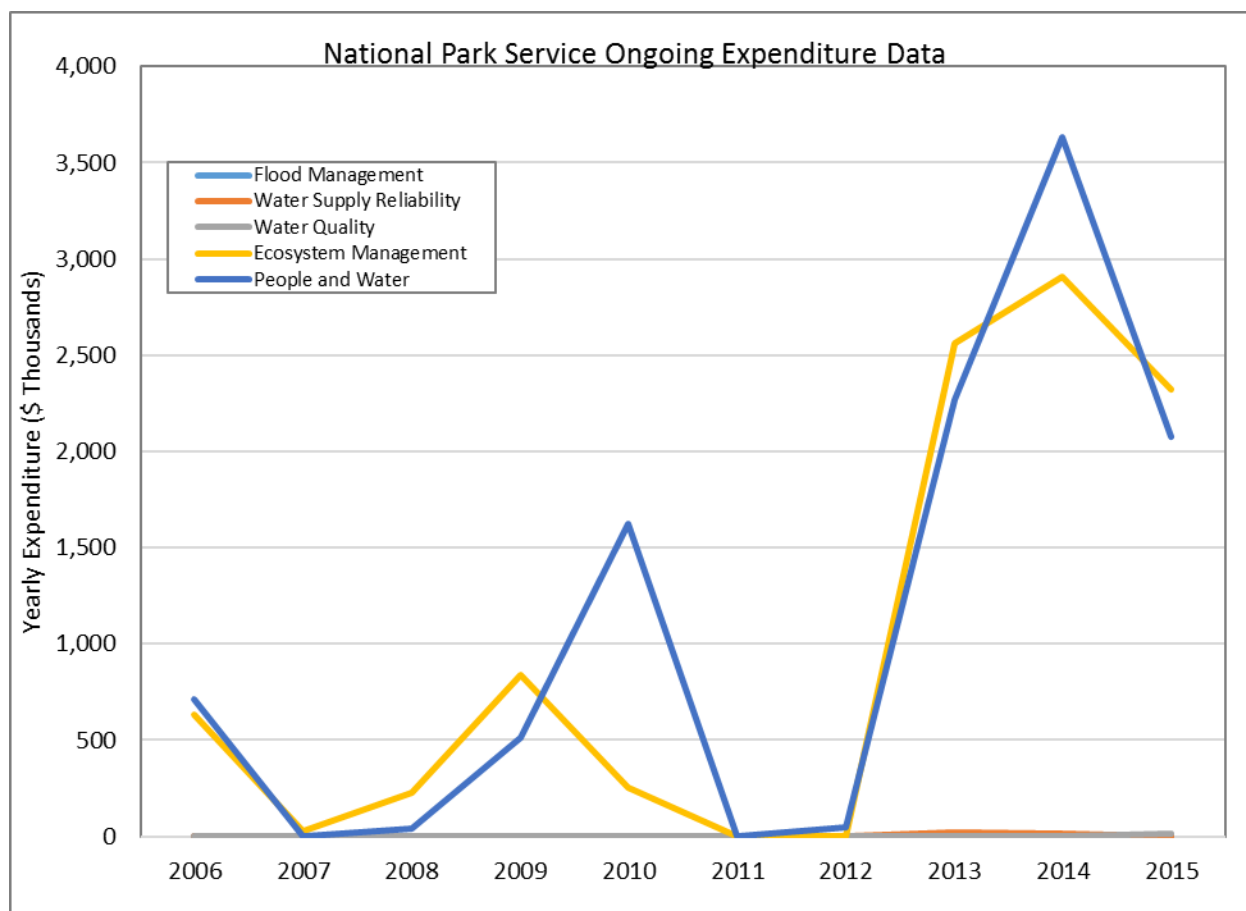


Figure 50 NPS Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: Library of Congress, 2017f

Notable observations of NPS ongoing expenditures include:

- From 2006 through 2015, there were no ongoing expenditures supporting flood management actions.
- Only two years, 2013 and 2014, reported ongoing expenditures for water supply reliability management actions. This funding supported water monitoring efforts in San Mateo County.
- Only one year, 2015, had ongoing expenditures supporting the water quality sector.
- Ecosystem management expenditures peaked in 2014, totaling approximately \$3 million. In that year, actions were implemented to support monitoring, mapping, and data management related to ecosystem resources, which were funded through the Corporative Research and Training Program, Conservation Protection and Natural Resources Stewardship programs.
- People and water ongoing expenditures averaged approximately \$1 million per year. Maximum expenditures occurred in 2014, totaling more than \$3.6 million. In that year, ongoing expenditures funded education and outreach activities including Conservation Activities by Youth Services, Cooperative Research and Training Programs, Cultural Resources Management and Conservation Protection Outreach and Education programs as well as O&M activities including National Trail System Projects, Natural Resource Stewardship Programs, and Preservation of

Japanese American Confinement Sites.

Total Federal Agency Expenditures

Total Federal agency expenditures are comprised of all expenditures by the Federal agencies. Between 2006 and 2015, total Federal agency expenditures averaged approximately \$788 million per year, with approximately \$431 million supporting capital actions and \$358 million supporting ongoing actions. In total, capital expenditures accounted for 55 percent of total Federal agency expenditures. The historical annual maximum for Federal agencies occurred in 2011 (\$1,074 billion). Table 60 and Figure 51 show capital, ongoing, and total Federal agency expenditures between 2006 and 2015.

Table 60 Total Federal Agency Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$438,285	\$359,383	\$797,668
2007	\$507,186	\$276,738	\$783,924
2008	\$447,217	\$260,626	\$707,843
2009	\$474,344	\$305,751	\$780,095
2010	\$442,259	\$479,468	\$921,727
2011	\$658,775	\$415,361	\$1,074,136
2012	\$358,417	\$362,238	\$720,655
2013	\$350,364	\$359,954	\$710,318
2014	\$322,372	\$448,826	\$771,198
2015	\$307,019	\$309,011	\$616,030
Average	\$430,624	\$357,736	\$788,359

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

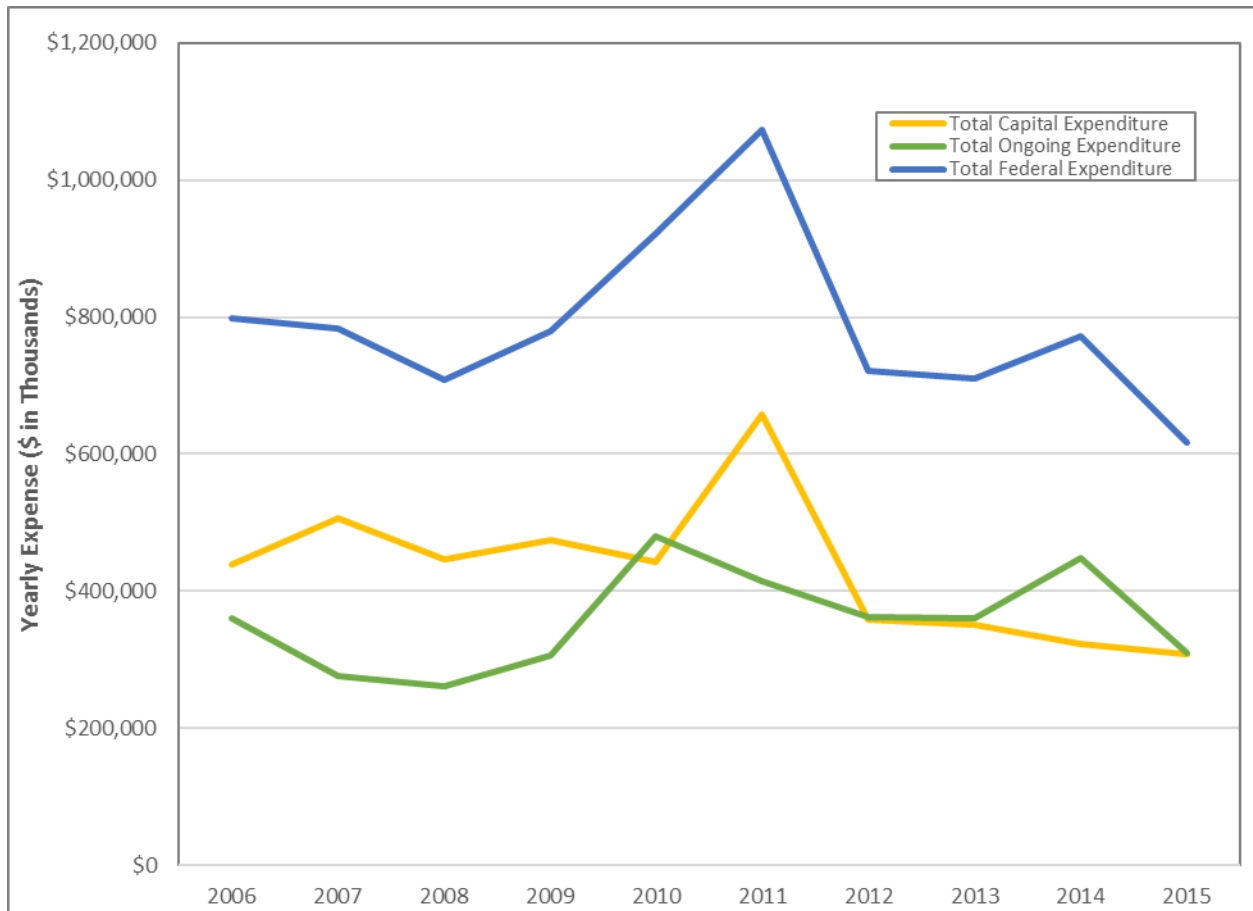


Figure 51 Total Federal Agency Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Total Federal Capital Expenditures

From 2006 to 2015, capital expenditures by all Federal agencies averaged more than \$431 million per year. Maximum expenditures occurred in 2011, totaling approximately \$660 million. The least amount of Federal expenditures occurred in 2015, totaling approximately \$307 million. Capital expenditures decreased between 2007 and 2015 except for an influx in expenditures in 2011, when ARRA funds became available. Table 61 and Figure 52 show Federal capital expenditures between 2006 and 2015 by water sector.

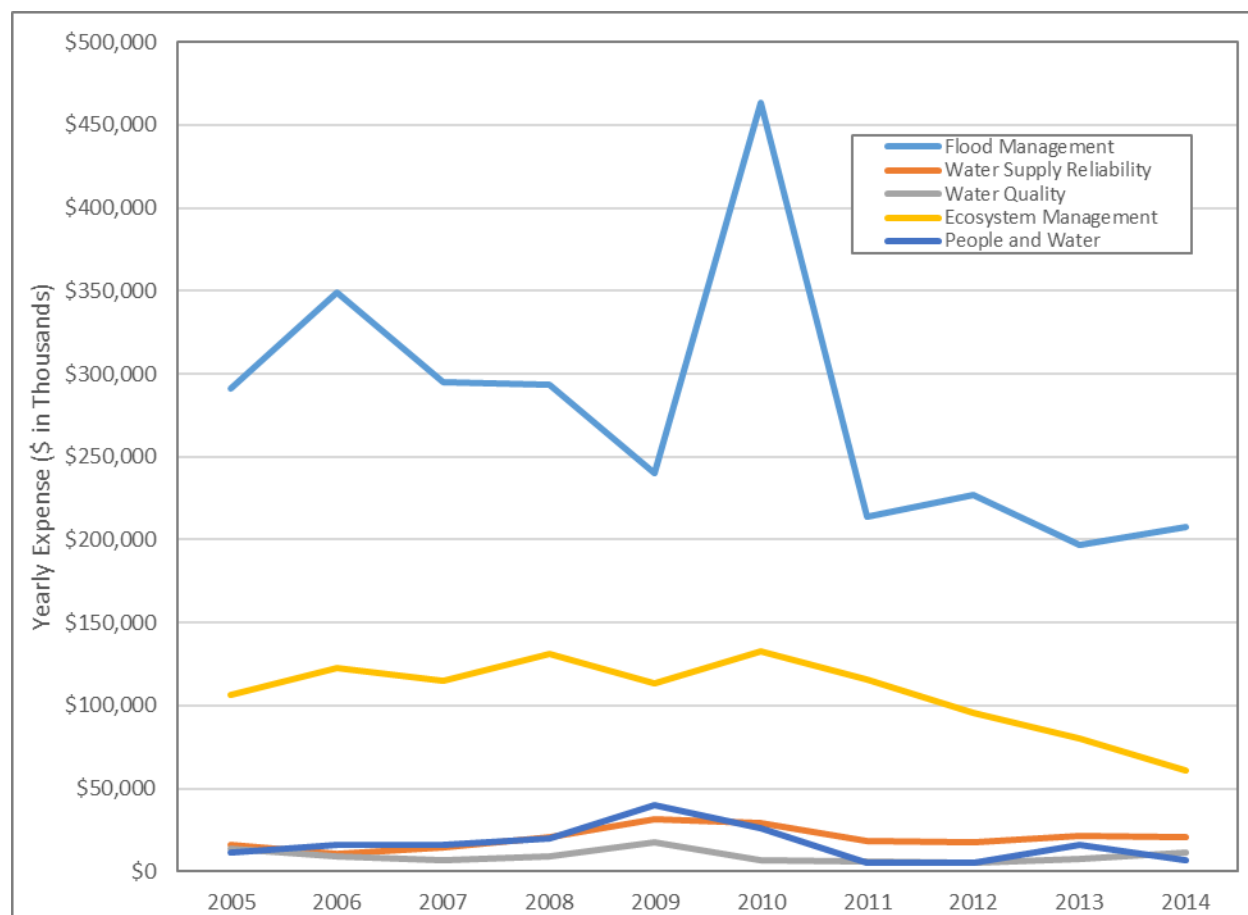
Table 61 Total Federal Agency Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$290,770	\$16,361	\$13,896	\$106,168	\$11,090	\$438,285
2007	\$348,905	\$10,512	\$8,805	\$122,974	\$15,990	\$507,186
2008	\$295,069	\$14,380	\$7,100	\$114,890	\$15,778	\$447,217

Table 61 Total Federal Agency Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2009	\$293,287	\$20,778	\$9,263	\$131,339	\$19,677	\$474,344
2010	\$240,012	\$31,353	\$17,230	\$113,603	\$40,061	\$442,259
2011	\$463,485	\$29,347	\$6,940	\$132,805	\$26,198	\$658,775
2012	\$213,732	\$17,968	\$5,945	\$115,574	\$5,199	\$358,418
2013	\$227,053	\$17,628	\$5,393	\$95,274	\$5,016	\$350,364
2014	\$196,472	\$21,757	\$7,879	\$80,159	\$16,106	\$322,373
2015	\$207,737	\$20,362	\$11,067	\$60,964	\$6,889	\$307,019
Average	\$277,652	\$20,044	\$9,352	\$107,375	\$16,200	\$430,624

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

**Figure 52 Total Federal Agency Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015**

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Notable observations of Federal agency capital expenditures include:

- A majority of capital expenditures supported flood management, accounting for approximately 65 percent of all capital actions. Capital actions for flood management averaged approximately \$278 million per year. With the exception of a large increase in funding in 2011 (totaling more than \$463 million), Federal agency capital expenditures declined during the period.
- Capital expenditures for water supply reliability actions accounted for only five percent of Federal capital expenditures, averaging more than \$20 million per year.
- Only two percent of all capital expenditures supported the water quality sector. Expenditures for water quality actions averaged approximately \$9 million per year. The years 2006, 2010, and 2015 were the only years that capital expenditures exceeded \$10 million.
- Ecosystem management capital expenditures averaged approximately \$107 million per year and accounted for 25 percent of all Federal agency capital expenditures. Maximum expenditures occurred in 2011, totaling more than \$133 million. The year 2015 saw the least amount of ecosystem management expenditures, totaling approximately \$61 million.
- Capital expenditures for people and water actions averaged more than \$16 million per year. The expenditures increased from 2006 to 2010 before decreasing for the majority of 2011 through 2015. There was a significant increase in funding in 2010 due to the ARRA.

Total Federal Agency Ongoing Expenditures

Ongoing expenditures by all Federal agencies averaged approximately \$358 million per year between 2006 and 2015. Maximum expenditures occurred in 2010, totaling approximately \$480 million, with minimum expenditures being reported in 2008, totaling more than \$261 million. Federal agency expenditures were generally higher in 2010 due to the ARRA. Table 62 and Figure 53 show ongoing expenditures for all Federal agencies between 2006 and 2015 by water sector.

Table 62 Total Federal Agency Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$98,162	\$132,530	\$1,018	\$54,344	\$73,330	\$359,384
2007	\$105,525	\$132,375	\$6,276	\$19,605	\$12,958	\$276,739
2008	\$75,858	\$131,422	\$11,142	\$15,828	\$26,374	\$260,624
2009	\$83,106	\$133,819	\$12,148	\$42,162	\$34,516	\$305,751
2010	\$155,378	\$132,019	\$19,112	\$59,197	\$113,762	\$479,468
2011	\$121,589	\$140,846	\$3,864	\$66,021	\$83,041	\$415,361
2012	\$107,144	\$127,529	\$2,551	\$58,356	\$66,657	\$362,237
2013	\$89,302	\$124,485	\$4,331	\$59,854	\$81,983	\$359,955
2014	\$131,778	\$157,361	\$2,724	\$65,156	\$91,807	\$448,826
2015	\$96,437	\$132,531	\$1,586	\$53,802	\$24,655	\$309,011
Average	\$106,428	\$134,492	\$6,475	\$49,433	\$60,908	\$357,736

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

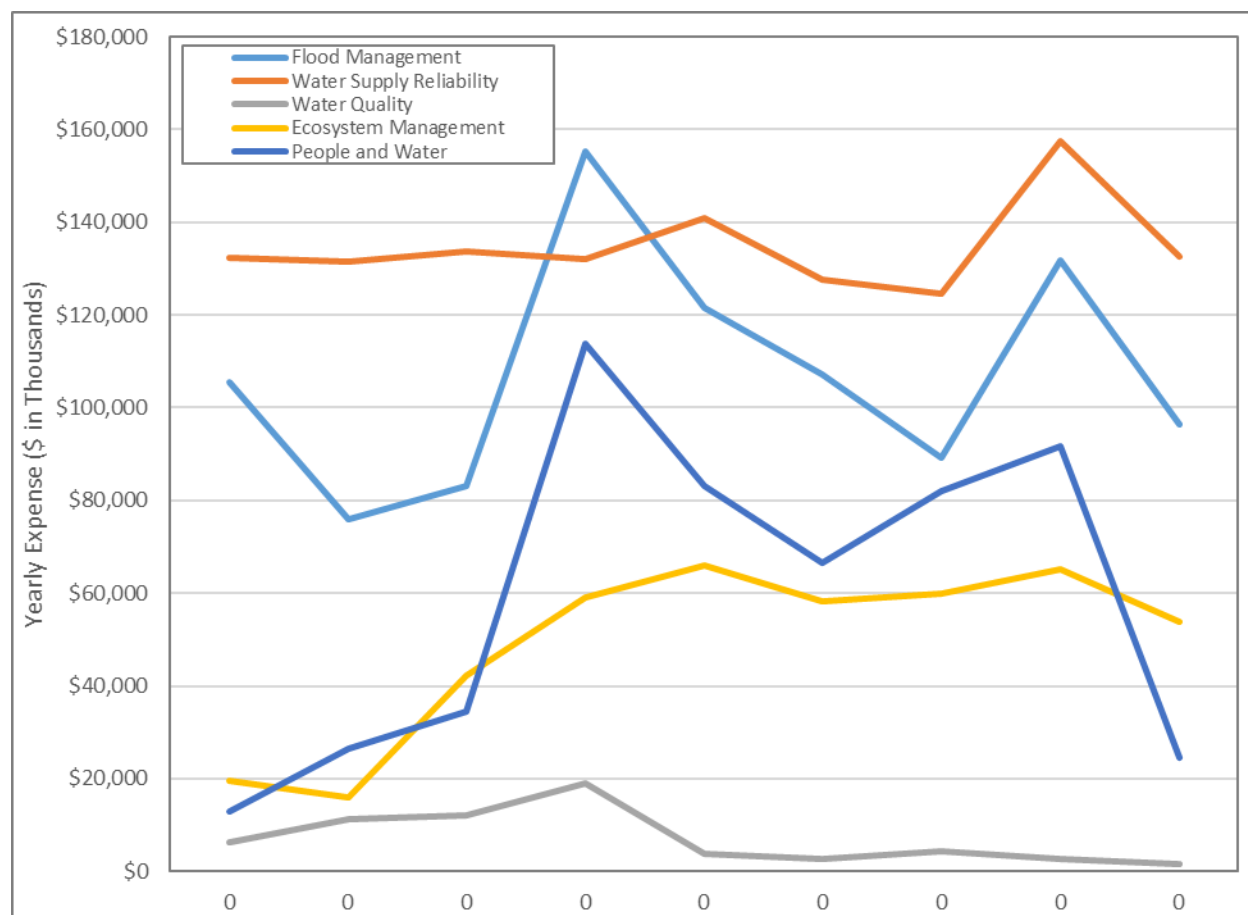


Figure 53 Total Federal Agency Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Notable observations of ongoing expenditures by all Federal agencies include:

- Flood management ongoing expenditures accounted for 30 percent of Federal agency ongoing expenditures, averaging \$106 million per year.
- The majority of all Federal agency ongoing expenditures supported water supply reliability management actions, averaging approximately \$134 million per year. With the exception of 2011 and 2014, where expenditures were higher than average, water supply reliability ongoing expenditures remained fairly consistent from 2006 through 2015. A majority of these expenditures supported data management for climate change.
- Only two percent of all Federal agency ongoing expenditures supported water quality management actions, averaging approximately \$6.5 million per year. With the exceptions of 2008 through 2010 where expenditures were much higher than average, expenditures remained consistently low.

- Ongoing expenditures for ecosystem management accounted for approximately 15 percent Federal agency ongoing expenditures, averaging approximately \$49 million per year.
- Ongoing expenditures for the people and water sector were similar to the totals in ecosystem management, averaging more than \$61 million per year.

Total Water Resources Management Expenditures in California

California water resources management expenditures are comprised of all expenditures made by State, local, and Federal public agencies. Between 2006 and 2015, water resources management expenditures in California averaged more than \$35 billion per year. A majority of these expenditures were for ongoing actions, averaging \$27 billion per year, whereas capital expenditures averaged more than \$8 billion per year. The split between ongoing and capital expenditures is approximately 75 percent for ongoing actions and 25 percent for capital actions. A majority of all water resources management expenditures in California are from local agencies, accounting for approximately 80 percent of all actions. Table 63 shows capital, ongoing, and total California water resources management expenditures between 2006 and 2015. Figure 54 shows the total California water resources management expenditures.

Table 63 Total California Water Resources Management Expenditures on Capital and Ongoing Actions in California, 2006 to 2015 (\$ in Thousands)

Year	Total Capital Expenditures	Total Ongoing Expenditures	Total Expenditures
2006	\$6,048,154	\$23,480,101	\$29,528,255
2007	\$6,879,759	\$26,888,793	\$33,768,552
2008	\$7,427,966	\$27,677,624	\$35,105,590
2009	\$7,549,608	\$28,132,210	\$35,681,818
2010	\$7,640,687	\$27,499,269	\$35,139,956
2011	\$8,657,606	\$27,734,598	\$36,392,204
2012	\$8,612,713	\$27,134,469	\$35,747,182
2013	\$9,129,402	\$26,647,779	\$35,777,181
2014	\$9,454,903	\$28,608,680	\$38,063,583
2015	\$9,655,730	\$29,852,911	\$39,508,641
Average	\$8,105,653	\$27,365,643	\$35,471,296

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; SCO, 2016a, 2016b, and 2016c; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, 2015d, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

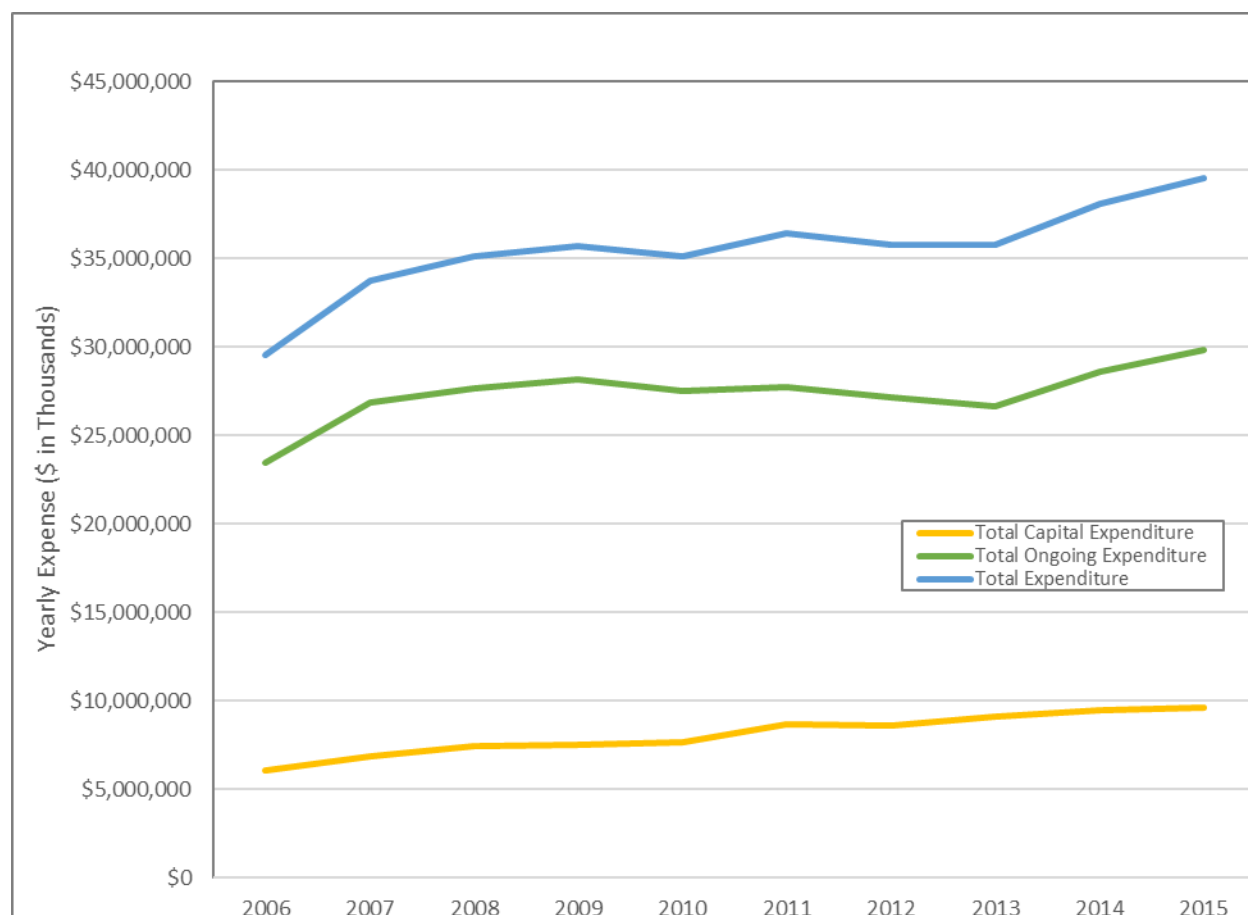


Figure 54 Total California Water Resources Management Expenditures on Capital and Ongoing Actions in California, 2006 to 2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; SCO, 2016a, 2016b, and 2016c; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, 2015d, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Total California Water Resources Management Capital Expenditures

Water resources management capital expenditures in California averaged more than \$8 billion per year. Capital expenditures remained relatively stable, as maximum and minimum years are close to the average: a maximum of \$9.6 billion in 2015 and a minimum of \$6 billion in 2006. Overall, the capital expenditures mildly increased from 2006 to 2015. Table 64 and Figure 55 show capital expenditures between 2006 and 2015 by water sector.

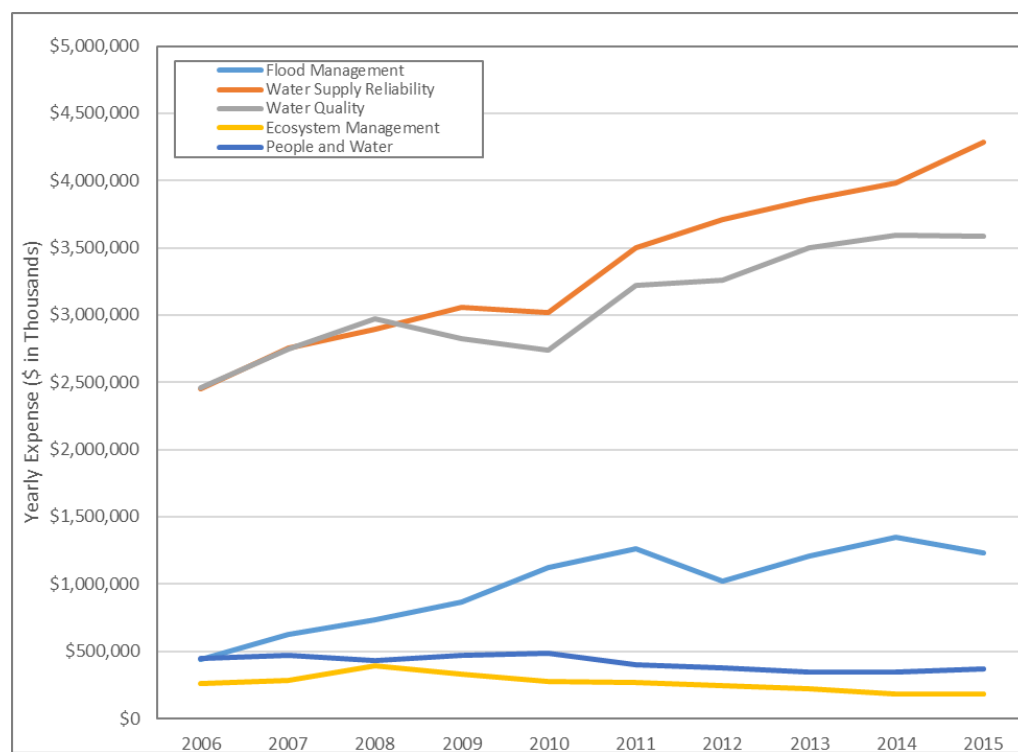
Table 64 Total California Water Resources Management Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$435,335	\$2,449,406	\$2,455,439	\$259,487	\$448,489	\$6,048,156
2007	\$623,986	\$2,752,237	\$2,747,626	\$285,954	\$469,955	\$6,879,758

Table 64 Total California Water Resources Management Expenditures on Capital Actions in California, by Water Sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2008	\$737,922	\$2,891,348	\$2,972,494	\$394,164	\$432,038	\$7,427,966
2009	\$869,830	\$3,054,658	\$2,826,027	\$326,602	\$472,491	\$7,549,608
2010	\$1,125,751	\$3,015,237	\$2,741,117	\$274,048	\$484,534	\$7,640,687
2011	\$1,265,657	\$3,501,822	\$3,222,055	\$266,303	\$401,770	\$8,657,607
2012	\$1,018,069	\$3,714,161	\$3,258,420	\$243,068	\$378,995	\$8,612,713
2013	\$1,209,661	\$3,857,316	\$3,501,789	\$217,609	\$343,028	\$9,129,403
2014	\$1,347,777	\$3,982,825	\$3,597,006	\$184,809	\$342,487	\$9,454,904
2015	\$1,229,610	\$4,289,003	\$3,587,410	\$183,140	\$366,566	\$9,655,729
Average	\$986,360	\$3,350,801	\$3,090,938	\$263,518	\$414,035	\$8,105,653

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; SCO, 2016a, 2016b, and 2016c; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, 2015d, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

**Figure 55 Total California Water Resources Management Expenditures on Capital Actions in California, by Water Sector between 2006 to 2015**

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; SCO, 2016a, 2016b, and 2016c; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, 2015d, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Notable observations of capital water resources management expenditures across California include:

- Flood management accounted for more than 10 percent all capital expenditures, averaging approximately \$986 million per year. Flood management expenditures fluctuated, ranging from \$435 million in 2006 to more than \$1.3 billion in 2014.
- A majority of all capital expenditures in California were for water supply reliability management actions, averaging approximately \$3.4 billion per year and accounted for more than 40 percent of all capital expenditures. Water supply reliability expenditures increased steadily during the period, from approximately \$2.5 billion in 2006 to approximately \$4.3 billion in 2015.
- Capital expenditures for the water quality sector averaged approximately \$3 billion per year. Capital expenditures increased steadily during the period from approximately \$2.5 billion in 2006 to approximately \$3.6 billion in 2015.
- Only three percent of all capital expenditures supported ecosystem management actions, averaging approximately \$264 million per year. Capital expenditures were highest in the first half of the period before declining.
- Capital expenditures for people and water management actions averaged approximately \$414 million per year. Capital expenditures were highest in the first half of the period before declining.

Total California Water Resources Management Ongoing Expenditures

Ongoing expenditures accounted for the majority of all water resources management expenditures in California. Ongoing expenditures averaged more than \$27 billion per year, with maximum expenditures occurring in 2015 (totaling approximately \$30 billion) and minimum expenditures occurring in 2006 (totaling more than \$23 billion). Table 65 and Figure 56 show ongoing expenditures between 2006 and 2015 by water sector.

Table 65 Total California Water Resources Management Expenditures on Ongoing Actions in California, by water sector, between 2006 to 2015 (\$ in Thousands)

Year	Flood Management	Water Supply Reliability	Water Quality	Ecosystem Management	People and Water	Total
2006	\$1,576,511	\$13,146,738	\$6,983,147	\$361,837	\$1,411,869	\$23,480,102
2007	\$1,769,979	\$14,828,794	\$8,173,628	\$544,769	\$1,571,623	\$26,888,793
2008	\$1,737,320	\$14,875,504	\$8,824,992	\$513,514	\$1,726,294	\$27,677,624
2009	\$1,999,382	\$14,524,247	\$9,152,179	\$526,541	\$1,929,860	\$28,132,209
2010	\$2,245,959	\$14,280,373	\$8,468,757	\$506,501	\$1,997,679	\$27,499,269
2011	\$2,124,252	\$14,080,791	\$9,084,049	\$525,539	\$1,919,967	\$27,734,598
2012	\$2,072,219	\$13,207,287	\$9,492,439	\$494,056	\$1,868,469	\$27,134,470
2013	\$1,872,384	\$12,515,938	\$9,940,050	\$424,983	\$1,894,423	\$26,647,778
2014	\$1,875,126	\$13,798,216	\$10,504,883	\$438,985	\$1,991,470	\$28,608,680
2015	\$1,905,939	\$14,804,607	\$10,538,570	\$603,692	\$2,000,104	\$29,852,912
Average	\$1,917,907	\$14,006,250	\$9,116,269	\$494,042	\$1,831,176	\$27,365,644

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; SCO, 2016a, 2016b, and 2016c; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, 2015d, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

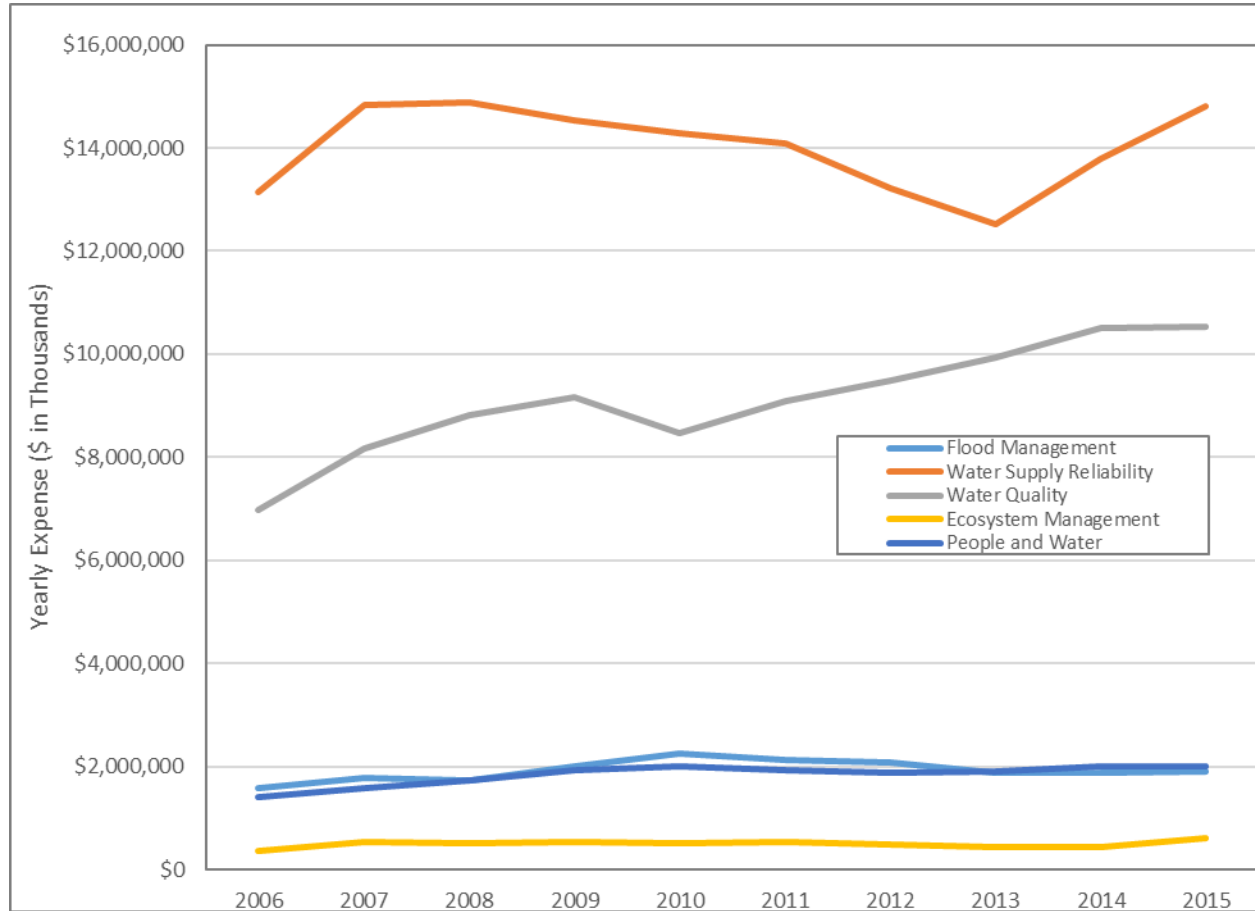


Figure 56 Total California Water Resources Management Expenditures on Ongoing Actions in California, by Water Sector, between 2006 to 2015

Source: California State Auditor, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; CDFG 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015; Library of Congress, 2017a, 2017b, 2017c, 2017d, 2017e, and 2017f; Reclamation, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014; SCO, 2016a, 2016b, and 2016c; State of California Governor's Budget, 2014a, 2014b, 2014c, 2014d, 2014e, 2015a, 2015b, 2015c, 2015d, 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, and 2017j; USACE 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, and 2014a

Notable observations of ongoing expenditures in California include:

- Ongoing expenditures for flood management actions were more than five percent of ongoing expenditures, averaging approximately \$2 billion per year.
- A large majority of all ongoing expenditures supported the water supply reliability sector, accounting for more than 50 percent of the all ongoing expenditures. Water supply reliability expenditures averaged more than \$14 billion per year.
- Water quality ongoing expenditures averaged more than \$9 billion per year and accounted for approximately 35 percent of all ongoing expenditures. Expenditures typically increased across the period, from approximately \$7 billion in 2006 to approximately \$11 billion in 2015.
- Only two percent of all ongoing expenditures supported ecosystem management actions, averaging more than \$494 million per year.

- Ongoing expenditures for the people and water sector averaged more than \$1.8 billion per year. Ongoing expenditures for people and water management actions remained consistent throughout the period.

Summary of Historic Expenditures for Water Management in California

Table 66 provides a summary of historic annual average, maximum, and actual 2015 expenditures for State, local, and Federal agencies. Historical expenditure information is used in the *California Water Plan Update 2018* to provide context and data for inclusion into the funding analysis, described in the *Funding Scenario Analysis* supporting document.

Table 66 Historical Funding Levels of Current Funding Mechanisms
(Based on Average and Maximum Historical Expenditures 2006–2015^{a, b})

Funding Mechanism	Historical Annual Average (\$ millions)	Historical Annual Maximum (\$ millions)	2015 Actual Expenditures (\$ millions)
General Fund	\$264	\$466	\$279
GO Bond	\$1,615	\$2,238	\$1,870
State Interest on GO Bond Debt ^b	\$491	\$695	\$668
Designated Special Fund ^c	\$4,982	\$7,092	\$3,362
Local Agency ^d	\$27,823	\$33,382	\$33,382
Federal Government ^e	\$788	\$1,074	\$616

Notes:

GO = general obligation

^a Table columns and row totals may not sum correctly because of rounding.

^b Interest on water related general obligation bonds debt from the California Department of Finance (<http://www.ebudget.ca.gov/2015-16/pdf/GovernorsBudget/8000/9600.pdf>).

^c Designated special fund mechanism includes fees, assessments, taxes, and other revenue sources with a designated purpose.

^d Local agency funding is from city, county and special district general funds, user fees, and GO bonds for water resources associated capital and some ongoing actions (excludes administrative and local agency operation and maintenance activities).

^e Federal government funding is from congressional appropriation for the Bureau of Land Management, Federal Emergency Management Agency, National Oceanic and Atmospheric Administration, U.S. National Park Service, Natural Resources Conservation Service, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, and U.S. Forest Service, water resources management associated capital and some ongoing actions (excludes administrative and federal operation and maintenance activities).

California Water Resources Management Planned or Proposed Management Actions

There are a number of significant issues facing water resources sustainability that put Californians at unacceptable risk. Supporting solutions to address this risk will require significant investments in water resources management to fund the expansion and improvement of existing water resources management systems, fund ongoing efforts to operate, maintain, support, and track systems, as well as repair, rehabilitate, and replace existing aging systems. The risk facing Californians will continue to grow unless actions are taken to address and fund solutions.

Historical annual levels of funding will no longer support State actions needed to meet the level of investment for long-term sustainability. California water resources management agencies have identified approximately \$189 billion in potential infrastructure investment need. In addition, there are ongoing funding needs to support planning, data management, and State operations and maintenance of more than \$1.32 billion annually. While the potential funding need is substantial, it does not capture all the water resources management need statewide.

This section presents an inventory of proposed or planned water resources management actions, and provides information about these management actions. This inventory expands upon the database² developed for California's Flood Future: Recommendations for Managing the State's Flood Risk. A range of sources concerning planned or proposed management actions were used to update the database, including the following:

- Local agency records and databases (DWR, 2013)
- Integrated Regional Water Management Plans (DWR, 2013)
- Regional Flood Management Plans (RFMPs; Feather River Regional Partners, 2014; FloodProtect, 2014; Mid and Upper Sacramento River Regional Flood Management Plan Partners, 2014; Reclamation District 2092, 2014; San Joaquin Area Flood Control Agency, 2014; San Joaquin River Flood Control Project Agency, 2015)
- Capital improvement plans
- 2014 Water Commission Survey (California Water Commission, 2014)
- 2014 planned USACE management actions (USACE, 2014b)
- Information from the Central Valley Flood Protection Plan (CVFPP; DWR, 2017b)
- Information from the SWRCB Underground Storage Tank Clean-up Fund (SWRCB, 2017b)
- SWRCB Financial Assistance Application Submittal Tool (SWRCB, 2017a)
- USEPA Clean Watershed Needs Survey (USEPA, 2017)
- SWRCB Clean Water State Revolving Fund (SWRCB, 2017c)
- SWRCB Drinking Water State Revolving Fund (SWRCB, 2017c)
- Interviews with 240 local agencies
- Interviews with DWR managers

The planned or proposed management actions database only includes actions that agencies have identified. The database does not detail all water resources management agency needs, but is a representative sample of the different types of management actions readily available across the state. In significant portions of the state, agencies have not been able to identify their water resources management needs because of time and cost constraints. Also, several management actions shown in the database are conceptual in nature, and do not yet have cost estimates. The management actions collated in the database do not necessarily represent the most effective, cost-effective, or resilient actions that could be

² California's Flood Future management action database can be found in Attachment E: Existing Conditions of Flood Management in California (Information Gathering) appendices located at <http://wdl.water.ca.gov/sfmp/resources.cfm#floodreport>.

implemented in a river basin or watershed. Lastly, inclusion of management actions in the inventory does not represent DWR's support or endorsement of any proposed management action. The management actions were grouped by capital and ongoing actions under the five thematic areas or water sectors:

- Flood Management, which includes urban and rural infrastructure, such as levees, pump stations, and dams; nonstructural actions, such as easements, setback levees, and land acquisitions; and transitory storage and bypasses. Flood management also addresses emergency preparedness and planning and the routine maintenance of infrastructure.
- Water Supply Reliability, which includes management actions such as reservoirs for surface storage; drought emergency preparedness; capital and ongoing actions for State Water Project facilities; and water use efficiency measures, such as irrigation efficiency projects, metering, WaterSmart irrigation systems and landscaping.
- Water Quality, which includes treatment for water and wastewater; groundwater remediation; watershed management; and preparedness, response, and recovery activities for water quality incidents.
- Ecosystem Management, which includes recovery activities, such as hatcheries; mitigation activities, such as the removal of barriers or invasive species; and the reconnection of habitats.
- People and Water, which includes management actions that increase recreational and educational opportunities, as well as enrich cultural, historical, and aesthetic resources.

Capital investments are often the focus of long term planning efforts; however, it is similarly important to consider the ongoing investment that is needed to operate and maintain facilities, provide the staffing, resources, and tools that support those facilities, and provide other ongoing functions such as planning, mapping, emergency management, and data collection. Sustainable and proactive ongoing investment can also offer savings in the longer term because large and sometimes reactive investments to repair, rehabilitate, or replace existing systems can be avoided.

Planned or Proposed Management Actions

Planned or proposed management actions represent all aspects of water resources management and are categorized into five water sectors. Planned or proposed management actions were also categorized by expenditure type (capital and ongoing). Total capital management actions identified totaled \$195 billion and ongoing management actions totaled more than \$27 billion per year. Table 67 represents the total capital and ongoing management actions by water sector. Tables 68 and 69 present an overview of the planned or proposed management capital and ongoing action categories within each water sector.

Table 67 Planned or Potential Capital and Ongoing Management Actions by Water Sector

Water Sector	Capital Management Actions (\$ millions)	Ongoing Management Actions (\$ millions per year)
Flood Management	\$35,731	\$2,190
Water Supply Reliability	\$77,572	\$13,609
Water Quality	\$54,436	\$9,292
Ecosystem Management	\$26,829	\$525
People and Water	\$517	\$1,811
Total	\$195,085	\$27,427

Table 68 Planned or Potential Capital Management Action Categories

Water Sector	Category	Description/Examples
Flood Management	Urban Infrastructure	Levees, pump stations, dams (flood storage and detention/retention), stormwater pipes and inlets, weirs, gates, etc.
Flood Management	Rural Infrastructure	Levees, weirs, gates, detention and retention basins, etc.
Flood Management	Nonstructural	Easements, land acquisition, setbacks, floodproofing
Flood Management	Transitory Storage/Bypasses	Off-channel storage; bypasses; large-scale setbacks
Water Supply Reliability	Surface Storage	Reservoir, weirs, pump stations, inlet/outlet structures, etc.
Water Supply Reliability	Groundwater Storage and Facilities	Recharge basins, drilling, pumps, piping, etc.
Water Supply Reliability	Conjunctive Use	
Water Supply Reliability	Conveyance	Pipes, canals, pump stations, diversion/inlet structures, etc.
Water Supply Reliability	Contracts (Transfers)	Water trades
Water Supply Reliability	Recycled Water	Stockpiles, access roads, vehicles, etc.
Water Supply Reliability	Desalination	
Water Supply Reliability	Agricultural Water Use Efficiency Measures	
Water Supply Reliability	Urban Water Use Efficiency Measures	
Water Supply Reliability	Precipitation Enhancement	
Water Quality	Groundwater Remediation	Groundwater treatment (including treatment trains/process or wellhead treatment, brine/concentrate management, inlet/outlet, piping, pumping, etc.)
Water Quality	Water/Wastewater Treatment	Water treatment plants (including treatment trains/process, inlet/outlet, piping, pumping, etc.)
Water Quality	Stormwater Management	
Ecosystem Management	Recovery Activities	
Ecosystem Management	Mitigation Activities	Dam Removal, Invasive Species Removal, Habitat Recovery, Revetment Removal, etc.
Ecosystem Management	Ecosystem Services and Natural Infrastructure	
People and Water	Recreation	Infrastructure and access sites
People and Water	Cultural	
People and Water	Historical	
People and Water	Social	
People and Water	Aesthetics	

Table 69 Planned or Potential Ongoing Management Action Categories

Water Sector	Category	Description/Examples
Flood Management	Residual Risk and Floodplain Management	Emergency preparedness/planning, risk awareness, public outreach
Flood Management	Routine O&M	

Table 69 Planned or Potential Ongoing Management Action Categories

Water Sector	Category	Description/Examples
Flood Management	Data Management, Tools, Planning and Tracking Performance	
Water Supply Reliability	Groundwater Management	GSAs and state assistance / coordination with GSAs
Water Supply Reliability	Drought Preparedness	Drought emergency preparedness (planning, training, modeling, etc....)
Water Supply Reliability	Operational Activities	Ongoing operation, expenses, and maintenance activities, institutional capacity and capability, operation of large multi-purpose reservoirs (releases for water supply, flood space, and ecosystem)
Water Supply Reliability	Data Management, Tools, Planning, and Tracking Performance	
Water Quality	Emergency Preparedness	Preparedness, response, and recovery activities for water quality incidents that impact health
Water Quality	Operational Activities	Ongoing operation, expenses, and maintenance activities, institutional capacity and capability
Water Quality	Watershed Management	Mountain meadows, forest service
Water Quality	Data Management, Tools, Planning, and Tracking Performance	
Ecosystem Management	Emergency Preparedness	Preparedness, response, and recovery activities for impacts to ecosystems
Ecosystem Management	Operational Activities	Ongoing operation, expenses, and maintenance activities, institutional capacity and capability
Ecosystem Management	Data Management, Tools, Planning, and Tracking Performance	
People and Water	Operational Activities	Management and maintenance of recreational sites, access/hunting permits, etc...
People and Water	Education	Activities and infrastructure at sites and programs (including in schools)
People and Water	Data Management, Tools, Planning, and Tracking Performance	Emergency preparedness/planning, risk awareness, public outreach

State Planned and Proposed Management Actions

The State must fund and maintain, on a consistent and reliable basis, the ongoing investments needed that support proactive and sustainable water resources management actions. Currently, no comprehensive estimate exists for the State's ongoing flood management investments. To supplement the historical and existing expenditures (discussed in Section 1) with more specific details and to better understand what future ongoing needs could be, the California Water Plan (CWP) conducted a series of informational gathering interviews with DWR and SWRCB program managers. The DWR and SWRCB managers estimated a need of more than \$350 million per year for ongoing management actions to support existing DWR programs and provide technical and financial assistance to local agencies across the state. Table 70 provides a list of the programs and offices within DWR and SWRCB that were interviewed.

Table 70 List of DWR and SWRCB Programs and Offices Interviewed

California Department of Water Resources
Division of Flood Management
Division of Integrated Regional Water Management
Sustainable Groundwater Management Branch
Northern Region Office
North Central Office
South Central Region Office
Southern Region Office
Division of Statewide Integrated Water Management
California Water Plan
Climate Adaptation
Integrated Data and Analysis Branch
Water Budgets and Analytics
Statewide Infrastructure Investigations Branch
Water Use and Efficiency Branch
Drought Mitigation
State Water Project
State Water Resources Control Board
Department of Toxic Substances Control
Underground Storage Tank Cleanup
Division of Water Quality

The ongoing expenditure interviews were focused on obtaining information about actions required to support existing legislative mandates and programs, as well as identify potential needed policy scale actions to improve sustainability. Potential policy scale actions included strategic planning, State technical and financial assistance, agency alignment (or governance), and regulatory refinement efforts. The information gathering interview questions focused on program ongoing funding needs and included the following questions:

- Is the program mandated or specially authorized?
- What is the current budget to support the program, including all necessary staff, tools, and other services?
- What are the anticipated future program staff funding needs?
- What are the anticipated future program data, tool, and other service needs?
- What are the funding source and limitations of the program?
- What are the benefits of the program?

Key findings from these interviews included:

- Many programs were created by the California Legislature or through the passage of propositions with prescribed obligations and requirements, but do not have a dedicated or secured source of funding. This forces new and existing programs to compete for existing funding resources.
- Some existing programs are required to perform additional actions without addition resources (people or funding) resulting in existing resources being spread thinner and difficult choices

being made about what actions to prioritize.

- Ongoing investments are often reduced when budget constraints exist during times of fiscal conservation.
- There is a need for additional future funding to meet the needs of existing programs and provide technical and financial assistance to local agencies, especially vulnerable and disadvantaged communities.
- The ongoing management actions categorized from the interviews had an estimated annual cost of more than \$395 million per year.

Table 71 provides a summary of the estimated funding required to meet existing mandates from the program managers interviewed.

Table 71 State Agency Ongoing Management Actions

Water Sector	Ongoing Management Actions (\$ millions per year)
Flood Management	\$214
Water Supply Reliability	\$113
Water Quality	\$4
Ecosystem Management	\$26
People and Water	\$39
Total	\$396

Summary of Planned or Potential Flood Management Actions in California

Approximately 9,400 water resources management actions were identified from State, local, and Federal agencies. Capital management actions have an estimated cost of approximately \$195 billion. In addition, ongoing management actions have an estimated annual cost of approximately \$28 billion per year. The database of planned or proposed management actions does not capture the complete extent of water resources management action needed to move toward sustainability in California but does provide a first estimate for the level of investment needed. This estimate has a number of limitations including:

- Only a small sample of representative agencies were interviewed (240 agencies) out of the more than 2,250 water resources management agencies statewide.
- Some communities and agencies within the State do not have the resources or institutional capacity necessary to identify water resources management needs.
- Local agency operation and maintenance needs statewide have not been assessed.
- Ongoing needs from all State agencies with water resources management responsibilities were not available. Ongoing need estimates are primarily derived from DWR and SWRCB. In the future, estimates for ongoing actions should be expanded to include other local and State agencies.

Table 72 provides a summary of total planned or proposed public agencies' capital and ongoing water resources management actions.

Table 72 Summary of Public Agencies' Capital and Ongoing Management Actions by Water Sector

Water Sector	Capital Management Actions (\$ millions)	Ongoing Management Actions (\$ millions per year)
Flood Management	\$35,731	\$2,404
Water Supply Reliability	\$77,572	\$13,722
Water Quality	\$54,436	\$9,296
Ecosystem Management	\$26,829	\$551
People and Water	\$517	\$1,850
Total	\$195,085	\$27,823

Funding to Implement Recommended Actions

Identifying, analyzing, and recommending ways to implement and fund the recommended actions described in Chapter 3 of *California Water Plan Update 2018* is essential to putting California on a more sustainable path. Table 73 provides a recommended actions summary by capital and ongoing management actions. Table 74 shows total funding needed to implement *California Water Plan Update 2018* recommended actions, as represented by the goals and objectives, for the near term and the long term. The total projected 50-year capital and ongoing cost is more than \$93 billion.

Table 73 Summary of Recommended Actions by Capital and Ongoing Management Actions

Recommended Action	Capital Management Actions (\$ millions)	Ongoing Management Actions (\$ millions per year)	Total Recommended Actions Need for 50 Years (\$ in Millions)
New or Modernized Infrastructure & Restored Ecosystems	\$61,435	\$570.90	\$89,980
Improved Alignment of Decisions, Initiatives, and Actions	\$-	\$16.09	\$804
Improved Regulatory Outcomes	\$-	\$0.12	\$6
Informed and Adaptive Decision-Making	\$-	\$50.89	\$2,545
Sufficient and Stable Funding	\$-	\$0.04	\$2
Total	\$61,435	\$638.035	\$93,337

Table 74 Funds Needed to Implement the Recommended Actions, Organized by Goals and Objectives (2016 Dollars)

Goals	Objectives	Years 1–5 2019–2023 (\$ millions)	Years 6–10 2024–2028 (\$ millions)	Years 11–30 2029–2048 (\$ millions)	Years 31–50 2049–2068 (\$ millions)
Goal 1^{a, b} <i>New or Modernized Infrastructure and Restored Ecosystems</i>	Objective 1 Improve Infrastructure & Ecosystems	1,898	3,015	28,340	32,300
	Objective 2 Improve O&M	1,167	2460	10,400	10,400
	Objective 3 Align efforts Around the Four Societal Values	5.25	4	15	15
Goal 2^c <i>Improved Alignment of Decisions, Initiatives, and Actions</i>	Objective 4 Effectively Manage Watersheds Over the Long-Term	52.5	79	316	316
	Objective 5 Strengthen Relationships with CA Native American Tribes	1.25	0.25	0	0
Goal 3^c <i>Improved Regulatory Outcomes</i>	Objective 6 Resolve Common Regulatory Challenges	6	0	0	0
Goal 4^c	Objective 7	228	260	1,010	1,010

Goals	Objectives	Years 1–5	Years 6–10	Years 11–30	Years 31–50
		2019–2023 (\$ millions)	2024–2028 (\$ millions)	2029–2048 (\$ millions)	2049–2068 (\$ millions)
<i>Informed and Adaptive Decision-Making</i>	Build Capacity for Data-Driven Decision-Making				
	Objective 8 Improve Adaptive Management	2	2.5	10	10
	Objective 9 Increase Californians' Awareness of Water Resources	0.75	1.25	5	5
Goal 5^c <i>Sufficient and Stable Funding</i>	Objective 10 Increase Consistency and Diversity of Funding Mechanisms	2	0	0	0
Total		\$3,363	\$5,822	\$40,096	\$44,056

Notes:

A sizeable portion (up to 85 percent) of the additional State funding is intended for use by local and regional water management entities to implement local activities and projects.

^a Nearly all costs are capital expenditures (Goal 1).

^b Depends on participation in voluntary State cost-sharing programs and refinement of funding needs in subsequent Water Plan updates.

^c All costs are expected to be ongoing (e.g., planning, data, improvement of State operations).

California Water Resources Management Funding Need and Gap

Historical annual levels of funding will no longer support State actions needed to meet the level of investment for long-term sustainability. Total California water resources management agencies have identified more than \$255 billion in potential infrastructure investment need. In addition, there are ongoing funding needs to support planning, data management, and State operations and maintenance of more than \$28 billion annually. Tables 75, 76, and 77 provide a summary of funding gap in California for capital, ongoing, and total management actions. The total funding gap for the 50-year period is approximately \$350 billion. Funding need information is used in the *California Water Plan Update 2018* to provide context and data for inclusion into the funding analysis, described in the *Funding Scenario Analysis* supporting document.

Table 75 Summary of Water Resources Management Capital Funding Gap in California

Management Action Type	Total Funding Need (\$ millions)	Average Historical Expenditure (\$ millions)	Funding Gap (\$ millions)
Recommended Actions	\$61,435	-	\$61,435
Flood Management	\$35,731	\$986	\$34,745
Water Supply Reliability	\$77,572	\$3,351	\$74,221
Water Quality	\$54,436	\$3,091	\$51,346
Ecosystem Management	\$26,829	\$264	\$26,566
People and Water	\$517	\$414	\$103
Total	\$256,520	\$8,106	\$248,416

Table 76 Summary of Water Resources Management Annual Ongoing Funding Gap in California

Management Action Type	Total Funding Need (\$ millions per year)	Average Historical Expenditure (\$ millions per year)	Funding Gap (\$ millions per year)
Recommended Actions	\$638	-	\$638
Flood Management	\$2,404	\$1,918	\$486
Water Supply Reliability	\$13,722	\$14,006	-- ^a
Water Quality	\$9,296	\$9,116	\$180
Ecosystem Management	\$551	\$494	\$57
People and Water	\$1,850	\$1,831	\$19
Total	\$28,461	\$27,365	\$1,380

Note: ^a The funding surplus in water supply reliability is due to incomplete information from State Water Project operations. In addition, water supply reliability needs are accounted for in the recommended actions under Goal 1 for infrastructure assessment and improved O&M.

Table 77 Total Summary of Water Resources Management Annual Capital and Ongoing Funding Gap in California

Management Action Type	Total Funding Need (\$ millions per year)	Average Historical Expenditure (\$ millions per year)	Funding Gap (\$ millions per year)
Recommended Actions	\$93,337	\$0	\$93,337
Flood Management	\$67,081	\$2,904	\$64,177
Water Supply Reliability	\$110,334	\$17,357	\$92,977
Water Quality	\$73,673	\$12,207	\$61,466
Ecosystem Management	\$31,890	\$758	\$31,133
People and Water	\$4,436	\$2,245	\$2,190
Total	\$380,751	\$35,471	\$345,280

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